ORDER

6750.50

INSTRUMENT LANDING SYSTEM--REMOTE MAINTENANCE MONITOR (ILS-RMM)

PROJECT IMPLEMENTATION PLAN (PIP)

MAY 5, 1988

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

Distribution: A-W(PS/SM/ES)-3;A-X(AF)-3;A-Z-2;A-Y(AY/DE)-2; A-FAF-2/3/7 (LTD)

Initiated By: APS-440

FOREWORD

This Project Implementation Plan provides direction for the implementation and acceptance of the Instrument Landing System - Remote Maintenance Monitor (ILS-RMM) into the National Airspace System (NAS). It defines the major functional responsibility levels, management direction, and overall program guidance to all responsible levels within the FAA for the implementation and installation of the Instrument Landing System- Remote Maintenance Monitor (ILS-RMM) retrofit.

James R. Etgen
Director, Program Engineering Service

TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

CHAPTER 1. GENERAL

1. PURPOSE. This project implementation plan (PIP) provides technical guidance and management direction for the implementation of the Instrument Landing System - Remote Maintenance Monitor (ILS-RMM) project. The PIP establishes program management, project implementation policy, and responsibilities governing the activities of organizations. The PIP is organized and presented as per FAA-STD-036, Preparation of Project Implementation Plans.

2. DISTRIBUTION. This order is distributed to branch level in the Program Engineering Service, the Systems Maintenance Service, and Systems Engineering Service in Washington Headquarters; to branch level in the regional Airway Facilities divisions; to division level at the FAA Technical Center and the FAA Academy and FAA Depot at the Mike Monroney Aeronautical Center; and to the Airway Facilities sectors, sector field offices, sector field units, and sector field office units.

3. DEFINITIONS.

ARMS	-	Airport Remote Monitoring System
BCPS	-	Battery Charger Power Supply.
ILS-RMM	-	Instrument Landing System - Remote Maintenance Monitor. (The ILS monitoring portion of the Airport Remote Monitoring System.)
IMCS	-	Interim Maintenance and Control Software.
LCU	-	Link Control Unit. (The component of the Airport Remote Monitoring System that acts as a concentrator.)
MDT	-	Maintenance Data Terminal.
MPS	-	Maintenance Processor System.
NBP	-	New Bedford Panoramex.
NW	-	Northrop Wilcox
RMS	-	Remote Monitoring Subsystem.
SARMS	-	Small Airport Remote Monitoring System. (Prototype predecessor of ILS-RMM.)
TI	-	Technassociates, Inc.

4. AUTHORITY TO CHANGE THIS ORDER. This order is issued under the authority of the Director, Program Engineering Service, APS-1. Any changes, revisions, or cancellation of this order may only be approved by APS-1.

5. - 9. RESERVED.

CHAPTER 2. PROJECT OVERVIEW

20. SYNOPSIS. The concept of remote maintenance monitoring was developed as a response to the FAA's examination of its future maintenance work load. The introduction of solid state equipment and computer technology improved the stability of new equipment, and reduced the number of site equipment failures. The AF workforce is still required to make periodic site visits to measure various parameters to certify the operational state of the equipment. The incorporation of microprocessor based monitor, control, and data acquisition functions into various airport systems allows for prudent increases in the site visit interval. The Instrument Landing System - Remote Maintenance Monitor (ILS-RMM) is a national application of the remote maintenance monitoring concept to selected ILS equipments. Airport sites to be retrofitted under the ILS-RMM project were selected based on identifiable operational need.

21. PURPOSE. The purpose of the ILS-RMM is to automate and add remote capability to many of the maintenance operations required for ILS equipment. The system provides monitoring and limited control of ILS equipment such that performance monitoring, fault isolation (which require skilled interpretation of the remoted parameters by the AF workforce), and limited control can be accomplished from a centralized work center. Implementation of the ILS-RMM project will bring about a substantial savings in maintenance of the ILS and enhance safety by allowing the AF workforce instant access as to the status of the safety critical Instrument Landing System.

22. HISTORY.

a. An operational need for a system that can measure parameters remotely from existing airport facilities was identified, and the Central Region developed the concept. The result of this successful effort was the Small Airport Remote Monitoring System (SARMS). It used off-the-shelf microcomputer components and communication modules to provide proof-of-concept. Several systems were installed in Central Region and elsewhere. The ILS-RMM project used the SARMS-developed specification, extending it to enhance supportability and compatibility with the APM-630 (now APS-410 and APS-430) conception of the NAS-RMM network.

b. The specification was baselined, project budgeted, and submitted for bids. New Bedford Panoramex (Santa Fe Springs, California) submitted the winning proposal with two subcontractors: Northrop Wilcox of Kansas City, Missouri; and Technassociates, Inc. (TI) of Rockville, Maryland. The development contract was let 30 September 1985.

c. New Bedford Panoramex (NBP) chose to subcontract the development engineering to Northrop Wilcox because of their familiarity with complex programming tasks and their own design of the ILS systems in the field. NBP chose to subcontract the technical documentation effort to TI. Since contract award, NBP has chosen to complete the documentation effort itself.

d. The development contract called for the design, development production, and installation of six ILS-RMM systems for the Mark IA through Mark IF ILS systems, including an RMS package for marker beacons. Early in 1987, the first ILS-RMM unit, a Mark ID was installed at Redbird Airport, near Dallas, Texas. This system was subject

to both contractor and APS-200 testing. The remaining five systems were installed and tested. They met the required specifications, but further enhancement of the FA-9783 DME interface and other improvements to the firmware are scheduled for release early in the production (Phase II) contract.

e. The second phase of the ILS-RMM program was contracted on 10 July 1987. It calls for delivery of 300 ILS-RMM systems (280 airports), commencing in first quarter, calendar year 1988. Marker beacon RMS units will not be procured under this contract.

23. - 29. RESERVED.

CHAPTER 3. PROJECT DESCRIPTION

30. FUNCTIONAL DESCRIPTION.

a. The ILS-RMM is the implementation of ILS maintenance monitoring into the RMM system architecture. It consists of microprocessor controlled equipment which remotely monitors, controls, and evaluates the performance of the ILS equipment. It includes a link control unit (LCU), and one or more equipment remote monitoring subsystems (RMSs). The maintenance processor system (MPS) is a central processor which receives, collects, and analyzes monitored data from remote monitoring subsystem concentrators (RMSCs). The RMSCs act as data packet multiplexers/demultiplexers for data flow between the MPS and the various remote monitoring subsystems (RMSs). In ILS-RMM, the LCU performs the concentrator function. Several LCUs and/or other RMSs can be further concentrated by the LCU/RMSC.

b. Fiqure 1 is a block diagram of ILS-RMM. The LCU provides a central point of communication between a maintenance processor system (MPS) and multiple equipment RMSs. Communication between a LCU and the RMSs utilizes NAS-MD-790 protocol. The Link Control Unit manages communication to the various equipment sites via a GFE UHF (406.1 - 420 Mhz) radio link, landlines, or an external modem.

c. The LCU continuously polls the RMSs connected to it and responds to their various states, alarms and alerts. Upon command from the MPS, the LCU interrogates or commands the RMSs to report or respond.

d. The equipment RMSs are located at various ILS equipment sites on the airport. An equipment RMS consists of sensors, a wiring harness which provides electrical connection to various nodes in the ILS, two interface Circuit Card Assemblies (CCAs), an analog to digital converter CCA, a data acquisition computer system CCA, and a 2400 baud Fed-STD-1005 modem. The sensors sample signals from the ILS electronics and environment, the wiring harness gives access to internal signals, power supplies, and the integral monitor. The interface CCAs buffer or preprocess and prescale the sampled signals under command from the data acquisition computer. The analog to digital converter digitizes the buffered and prescaled signals from the interface CCAs. The data acquisition computer system, formats and transmits, through the modem CCA, to the link control unit the sampled signals and acts on its commands (e.g. Reset, Turn ON, Turn Off). The link control unit and each equipment RMS incorporate a terminal interface. The terminal interface, when connected to a standard portable terminal or Maintenance Data Terminal (MDT), provides for local control and monitoring of the ILS-RMM.

e. When an FA-9783 DME is collocated with the localizer, an RS-232 type cable connects the DME to the localizer RMS. The DME is continually monitored by the RMS; alarm conditions are reported as if the DME were a separately monitored facility. Full status and control functions are available through the local RMS terminal interface, the remote LCU terminal interface, and the MPS interface. These status and control functions are the same as those avalilable through the front panel keyboard. Authorized user ID and password security are required at all three interfaces to ensure that only authorized personnel are given access to these status and control functions.

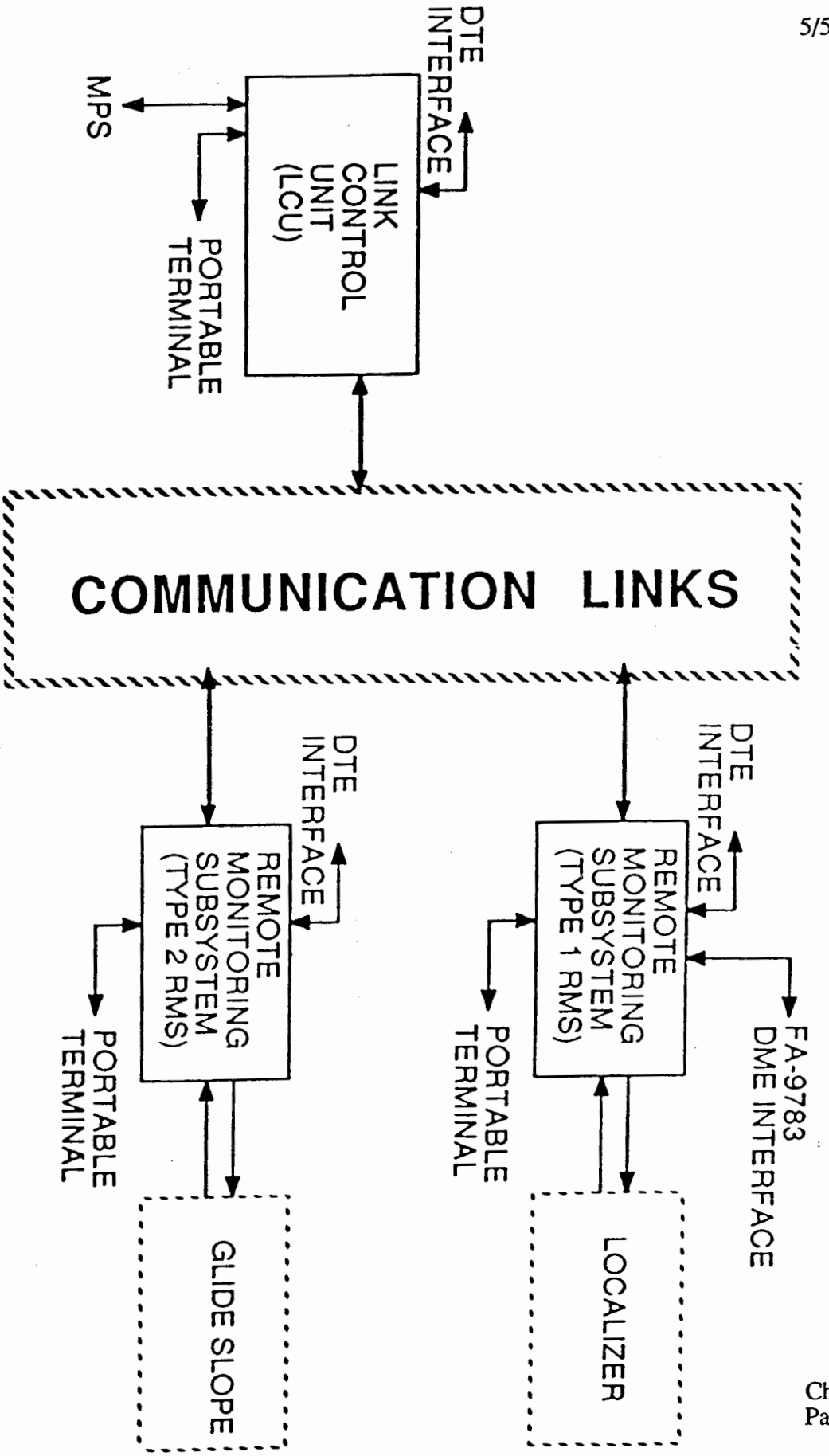

FIGURE 3-1. COMMUNICATION LINKS

31. PHYSICAL DESCRIPTION.

a. LCU. The link control unit acts as a central point of communication and manages all communication between the MPS and the equipment RMSs. The LCU is designed with the capacity for interfacing to 10 equipment RMSs. With the installation of an expansion kit the LCU can be interfaced with up to 20 equipment RMSs. The link control unit consists of a power supply, VMEbus card cage, and three data link interfaces. The data link interfaces are the maintenance processor subsystem (MPS) interface, the link control unit to equipment RMSs multipoint data link (radio link, 600 Ohm twisted pair, or RS-232C), and the terminal interface. The LCU is designed for Environment II conditions (-10 degrees centigrade to +50 degrees centigrade, 5 percent to 90 percent relative humidity), unattended, continuous operation. It is designed for mounting in a standard 19 inch rack and occupies the space of an "E" size (8.75 inch) panel. In locating the LCU, consideration should be given to connection of the LCU with the link communication equipment and external airport communications. Appropriate locations might be the tower equipment room or flight service station equipment room as determined by the region.

b. RMS equipment.

(1) The thirteen RMS equipment types interface to their corresponding ILS ground electronics equipments to remotely monitor their performance. These thirteen types monitor Mark 1A through Mark 1F localizers, glideslopes, and marker beacons:

(a) Type IA - Type IF - Remote monitoring subsystems for the Mark 1A - Mark 1F single channel localizer equipments.

(b) Type IIa - Type IIF - Remote monitoring subsystems for the Mark 1A - Mark 1F single channel glide slope equipments.

(c) Type III - Remote monitoring subsystems for single channel marker equipment. (Not procured under present contract and is not covered by this Plan.)

(2) The localizer RMSs provide for an external serial (RS-232C) interface to the DME-9783 which has minimal RMM built in. The ILS ground equipment is to be modified for interfacing with the ILS-RMM equipment after site delivery. Electronic Equipment Modification manuals (EEMs) for the ILS-RMM describe the modification procedures and necessary kits.

(3) ILS equipment types to be retrofitted that do not fall under the categories above will have various kits procured under the Phase II contract. The kits will be add-on type to the RMS equipment. Add-on kits available are listed below.

(a) Dual Transmitter Localizer for Type IA,IF.

(b) Dual Transmitter Glide Slope for Type IIA,IIB,IIF.

(c) FA-9783 DME collocated with Localizer for Type IA,IB,ID,IE,IF.

(d) Capture Effect Glide Slope for Type IIB,IIC,IID,IIE,IIF.

32. SYSTEM REQUIREMENTS.

a. Electrical power. The Link Control Unit (LCU) and each equipment RMS includes a battery charger power supply (BCPS) which operates from a 120 volt, 60 Hz ac power source and produces a nominal 26 vdc (23 - 27 vdc adjustable). The BCPS is hung on the adjacent wall of the ILS equipment shelter or mounted in the LCU rack. The BCPS charges batteries for standby power for the RMS/LCU and/or powers the dc-dc converter in the LCU/RMS drawer providing regulated +5, +15, -15, +12, -12, and +9 vdc. Standby batteries are not supplied by the program office; they are optional but recommended. They should be identical to the current standby batteries used by the ILS equipment; it is recommended that they be collocated in the same battery box.

b. Communication links. Data transmission between the link control unit and each equipment RMS is half-duplex, multipoint operating at 2400 bits per second via the radio link. The radio link operates in the UHF frequency band between 406.1 and 420 MHz, transmits up to 4 Watts, and connects to the ILS-RMM drawers using analog audio from the ILS-RMM internal modems. Frequencies were assigned on a site by site basis (see Appendix 3). Provision is made to disable and remove the radio link and to operate via point-to-point, half duplex, two-wire phone lines connecting the link control unit to each equipment RMS in lieu of the radio link. It is also possible to operate on a combination of radio and landline communication.

c. Data transmission between the link control unit and the MPS is via leased line at selectable speeds of 2400, 4800, 9600, 19.2K or 38.4K bits per second two-way-alternate. Minimum landline quality in this configuration must be channel type 3002, (AT&T Tariff FCC-260) conditioned C-2 per Bell System Technical Reference Publication 41004 or equivalent. Since AT&T Tariff FCC-260 has been replaced by AT&T Tariff 9,10,11, the current equivalent line is channel type 5 conditioned C-2 with protocol type NO of AT&T Publication 43202. The line may be unconditioned (basic) if the modems can still transmit 2400 bps at an acceptable bit error rate. FAA Order 6000.22, Maintenance of Two-Point Private Lines, is scheduled to be updated to provide guidelines for required line characteristics to remove the dependence on the AT&T Standard. ILS-RMM can also communicate using external modems (bypassing internal modems) using the supplied RS-232 interface.

33. INTERFACES. The protocol used to control the data links between the link control unit, each equipment RMS, and the MPS is in accordance with ANSI 3.66, American National Standard for Advanced Data Communications Control Procedures (ADCCP), NAS-MD-790 Remote Maintenance Monitoring System Interface Control Document. The link control unit is the primary station and the equipment RMSs are the secondary stations.

34. - 39. RESERVED.

CHAPTER 4. PROJECT SCHEDULE AND STATUS

40. PROJECT SCHEDULE AND STATUS, GENERAL. The procurement of the ILS-RMM equipment is divided into two contract phases. Phase I, DTFA01-85Y-01054, is a design/development contract which will provide six ILS-RMM systems for field test and evaluation. The implementation of these initial six systems is not within the scope of this document. Phase II, DTFA01-87-Y-01040, is a production contract which calls for the delivery of ILS-RMM equipment to retrofit 280 airports. Delivery of production equipment will begin with approximately ten systems in fiscal year 1988. The bulk of the systems (approx. 260) will be delivered fiscal year 1989. The remaining systems will be delivered during 1990.

41. MILESTONE SCHEDULE SUMMARY. A table of major project milestones is listed below. This table is not an all inclusive list of project milestones necessary for project completion.

PHASE I	
Contract Award	30-SEP-85
Preliminary Design Review	05-MAR-86
Critical Design Review	07-JUN-86
First System Delivered to T&E Site (Type D)	17-JUL-87
PHASE II	
Contract Award	10-JUL-87
First Production System Delivery (To FAA Depot)	29-FEB-88
First System Available to Field	29-JUL-88
Last System Delivered to FAA Depot	25-APR-89

42. INTERDEPENDENCIES AND SEQUENCE. Refer to appendix 3 for the interdependencies and sequence.

43. - 49. RESERVED.

CHAPTER 5. PROJECT MANAGEMENT

50. PROJECT MANAGEMENT, GENERAL. The overall project management of the ILS-RMM project is the responsibility of the Current Landing/Lighting Systems Program, APS-440. This organization will accomplish management tasks within the guidelines provided by FAA policies, procedures and directives. APS-440 is designated project manager and is the single focal point for all project activities. The technical officer (TO) position is filled by an engineer designated by the project manager (PM), (APS-440) and provides technical guidance and direction to the contractor within the scope of the contract. The PM will ensure that the contractor has access to technical documentation, appropriate data bases, and sources of information relative to government furnished equipment (GFE). The National Airspace Integrated Logistics (NAILS) Management Team (NAILSMT) will meet semi-annually during the first few years of the contract and at least annually thereafter to address specific areas of logistic consideration and/or to review logistic requirements in general. The contracting officer (CO), ALG-320, designates a contract specialist to perform the general contract management activities to assure that the terms of performance under the contract are met. The CO is the only person authorized to make changes that will affect prices, deliverables, or schedules.

a. Washington, D.C. The following organizations within FAA headquarters, Washington, D.C., will fulfill the indicated responsibilities required for project implementation:

(1) Program Engineering Service (APS).

(a) Provide technical surveillance of contractor in the design, development, testing installation, integration, and production of hardware and software for the ILS-RMM project. Ensure all technical contract requirements are met.

(b) Provide project guidance to all offices, services, centers, and regions on the implementation of the ILS-RMM project. This includes, but is not limited to :

(1) Site installation.

(2) Disposition of excess equipment.

(3) Provisioning

(4) Updates to maintenance concept.

(5) Training.

(6) Configuration Management.

(7) Documentation Deliverables.

(8) All test phases.

(9) Operational Readiness Demonstration (ORD).

(10) Operations changeover.

(c) Act as a chairman for working groups established to support the ILS-RMM project.

(d) Manage the interdependencies between the ILS-RMM project and those projects which interface with the ILS-RMM project.

(e) Coordinate the development of system shakedown test plans and procedures with ASM-150.

(f) Provide membership to the ILS-RMM configuration Control Board (CCB) and Program Planning Group.

(g) Ensure the availability of funds to keep the contract within budget limitations.

(h) Determine distribution of ILS-RMM hardware documentation.

(i) Direct preparation of, and approve, all test plans, test procedures, and test reports.

(j) Act as chairman for the National Airspace Integrated Logistics Support (NAILS) Management Team (NAILSMT).

(2) Systems Engineering and Integration Contractor (SEIC) Project Management. The SEIC provides support in accordance with contract DTFA01-84-C-00017, Chapter 10, NAS Project Management REquirements, and in accordance with contract DTFA01-85-Y-01002, para. H.2. These contracts require the SEIC to assist APS-440 with overall management of the project. Specific tasks include:

(a) Project Planning.

(b) Subsystem and interface configuration control.

(c) Project financial management and control.

(d) Project schedule control.

(e) Documentation review.

(f) Logistics support management and analysis.

(g) Contribution to project reviews and reports.

(h) Coordination with the ILS-RMM contractor.

(i) Provide membership to the Program Planning Group.
(j) Provide membership to the Configuration Control Board.

(k) Provide membership to the National Airspace Integrated Logistics Support (NAILS) Management Team (NAILSMT).

(3) Acquisition and Materiel Service (ALG).

(a) Provide support to contractor test manager for conduct of factory acceptance programs.

(b) Provide industrial engineering support and production surveillance of program management and contract administration.

(c) Provide policy and procedural guidance to regional Airways Facilities divisions and Mike Monroney Aeronautical Center for appropriate ILS-RMM property controls prior to certification.

(d) Assist APS in providing procedures for the disposal or utilization of surplus materiel.

(e) Furnish quality reliability officer for in-plant quality and reliability assurance.

(f) Provide a member of ALG to participate in the Project Planning Group.

(g) Provide a member of ALG to participate in the Configuration Control Board.

(h) Provide membership to the National Airspace Integrated Logistics Support (NAILS) Management Team (NAILSMT).

(4) Systems Maintenance Service (ASM).

(a) Develop system shakedown test plans and procedures.

(b) Provide maintenance support for hardware and diagnostic software after initial operational capability (IOC).

b. Field Organizations. The responsibilities of the FAA Technical Center, regions and other field organizations include:

(1) Federal Aviation Administration Technical Center (ACT). Provide the support necessary to test and evaluate the project for functional and operational performance and for compliance with the specification. The FAA Technical Center will perform these duties in accordance with FAA Order 1810.4, ADL Test and Evaluation Program. ACT-110 will serve as the lead for integration testing: developing and performing Integration Test Plans and Procedures. Integration testing will ensure that the interface to the MPS conforms with NAS-MD-790 and meets functional and performance requirements in NAS-SS-1000. The test representative will coordinate his activities with the Project Manager, APS-440.

(2) Mike Monroney Aeronautical Center (AAC).

(a) Provide logistic support service and planning through membership to the National Airspace Integrated Logistics Support (NAILS) Management Team (NAILSMT).

(b) Accomplish cataloging and provisioning for ILS-RMM equipment.

(c) Provide supplies and working equipment for each facility receiving ILS-RMM equipment.

(d) Provide national project materiel which is not procured by ALG.

(e) Develop, monitor, and conduct ILS-RMM training programs as directed by APT-300.

(f) Adapt national engineering specifications to local conditions and perform engineering services within nationally provided guidelines for the installation, inspection, and acceptance of the ILS-RMM system, including subsystem components, at the FAA Academy.

(g) Provide engineering feedback to APS-440 for correction of system or equipment deficiencies for the installed ILS-RMM system.

(h) Provide for technical supervision of onsite activities at Mike Monroney Aeronautical Center performed under the contract.

(i) Accomplish preliminary acceptance of items delivered to the FAA Academy under the contract.

(j) Develop, in conjunction with ALG and APS-220 logistics policies and plans for support of the system.

(k) Participate in planning activities for the transition of the system equipment into the logistics inventory.

(l) Participate, as requested by APT-300, in the review of instruction books.

(m) Assure timely selections of necessary instructor and maintenance personnel to meet Mike Monroney Aeronautical Center training and staffing requirements.

(3) Regions. Each region shall appoint a regional project manager for ILS-RMM. The regional project manager will ensure that facilities and engineering work is complete prior to the delivery of equipment. He will monitor the installation of the equipment and coordinate requests for contractual or technical support with APS-440 and the National Airway Engineering Field support Sector, ASM-150. The regions shall fulfill the following responsibilities:

(a) Responsible for site preparation and monitoring equipment installation

in accordance with schedules provided in appendix 3. Coordinate with APS on any changes to these schedules.

(b) Assign a Regional Integration Group (RIG) to provide for coordination, direction, and guidance necessary for effective and timely implementation of the project. The RIG shall be chaired by the regional project manager and will be comprised of regionally selected Airways Facilities personnel knowledgeable in implementation of automation programs. They are to be responsive to the guidance and direction of the region for monitoring the efforts at each site within the region. The RIG is to monitor and provide assistance and guidance in all phases of the ILS-RMM implementation for all regional sites.

(c) Through the National Airspace Integrated Logistics Support (NAILS) Management Team (NAILSMT), provide input to AAC and APS-440 as they relate to regional logistics requirements.

(d) Assist ASM-150 in the development of a System Shakedown Test Plan and Procedures as required.

(e) Conduct system shakedown test and operations changeover test plan in accordance with the requirements of the test plans for these functions.

(f) Develop the required environmental and AS BUILT records.

(g) Submit communication service requests (CSRs) in coordination with the program office to TM&O ASM-320 for all interfacility communications required, to obtain assignments on FAA communication utilities or authorization to use leased facilities. If authorization to use leased facilities is granted, obtain through the Defense Commercial Communications Office (DECCO), as appropriate, all TELCO services required for the timely acquisition of communications required for ILS-RMM.

(h) Assure that appropriate FAA/Military local onsite agreements are reached.

(i) Generate the operations Changeover Test Plan.

(j) Establish financial and item management control, and accountability for all agency property received in the region.

(k) Provide proper administrative channels of communication to assure APS-440 full cognizance of project status at all times.

(l) Obtain MPS to ILS-RMM leased line communications in coordination with ASM-300 and APS-440.

(m) Obtain inter-facility modems through APS-530 or equivalent regional organizations in coordination with the program office.

51. PROJECT CONTACTS. Appendix 2. contains a listing of contacts for the ILS-RMM project.

52. PROJECT COORDINATION. The following project groups will assist the program office in fulfilling assigned responsibilities.

a. Configuration Control Board. In accordance with 1800.8E, National Airspace System Configuration Management, dated 11 July 1985, the Configuration Control Board (CCB) is the official agency-authorized vehicle to approve or disapprove baselines and changes to the baselines. There is a central NAS CCB to establish and control baselines, and to administer configuration control. From this CCB, authority is delegated to lower level CCB's to effectively administer proposed changes at the most appropriate level. All lower-level CCB's are accountable to the NAS CCB, which has been established through a charter defining its authority, responsibilities (including the specific documents over which the CCB has control), and membership. Decisions and directions are documented in Configuration Control Decisions (CCD), which either approves, disapproves, defers, or refers the change request to another CCB. When contractual action is required, the CCD serves as a basis for preparation of any procurement request which is submitted to the contracting officer. The CCD may also be distributed to other Government agencies and serves as an official notification of CCB action. Representatives on the CCB are to include the various agency services/offices that have responsibilities to acquire, support, and operate the system. Other representatives may be invited to attend as required.

b. ASM-300, Communication and Surveillance Division. The Communication and Surveillance Division, ASM-300 will act in coordination with the regions and APS-440 to procure MPS to ILS-RMM leased line communications.

c. Other. Other offices as listed in paragraph 53.

53. PROJECT RESPONSIBILITY MATRIX.

TASK/PLAN/ACTIVITY	PRIMARY OFFICE	SUPPORTING OFFICES
Preliminary Installation Schedule	APS-440	Regions
Training Programs Schedules and Assignments	ASM-210	ATR,APS-220, ATO,AAT ASM-150/160 Regions,AAC
Interfacility Data Transfer Plan Update	ACT-100	ATR-200

Configuration Management (HW/SW)	AES-410	ASM-150/160, ATR/ATO,Regions APS-200
Software Maintenance (Operational)	ASM-160	APS-220,Regions ATR-230
Software Maintenance (Diagnostic)	ASM-150	APS-220,Regions
System Maintenance Procedures Handbook Update	ASM-150	Contractor
Integration Test Plan and Procedures	ACT-110	APS-440,APS-220 ASM-150/160
System Shakedown Test Plan	ASM-150	APS-440,APS-220 Regions,ACT,ATO ATR-560
System Shakedown Test Procedures	ASM-150 Regions	APS-440,APS-220 ACT,ATO,ATR
Operations Changeover Test Plan	Regions	APS-440,ASM-150/160 ATR,ATO
Logistic Support Planning	AAC, ALG	APS-220,Regions

54. PROJECT MANAGERIAL COMMUNICATIONS.

a. Project managerial communications are provided monthly to APS-1 and ADL-1 through a Program Status Review Board (PSRB). This PSRB provides insight into cost, schedule, technical and logistics issues that may exist. Communication to the various branches of ATR, ATO, AAC, ALG, ASM, FAA Technical Center, the Regions and other APS organizations occurs formally through NAILS Management Team (NAILSMT) meetings that are initiated during all stages of the program.

b. Each region shall appoint an ILS-RMM project manager as the contact point to the program office. The project manager shall be responsible for implementation of ILS-RMM in the region. As ILS-RMM is to be installed as an EEM, an operations project manager is desired. Prior to implementation of the ILS-RMM, seminars will be held by APS-440 to provide updated schedules, technical and logistics information and to further explain site specific implementation issues.

55. IMPLEMENTATION STAFFING. The AF workforce will perform installations by Electronic Equipment Modifications (EEMs).

56. PLANNING AND REPORTS. APS-440 is responsible for planning and reports.

Instruction Manuals:

Airport Remote Monitoring System	TI6140.6
Link Control Unit	TI6140.7
Type I&II ILS RMS	TI6140.8
Type III ILS RMS	TI6140.14
Battery Charger Power Supply	TI6140.15

Electronic Equipment Modification Manuals (EEMs)
(Generic manual for all systems) AF P 6750.1 CHG XXX

57. APPLICABLE DOCUMENTS. Appendix 3 contains a listing of documents applicable to the ILS-RMM project.

58. - 59. RESERVED.

CHAPTER 6. PROJECT FUNDING

60. PROJECT FUNDING STATUS, GENERAL. On 30 September 1985 contract DTFA01-85-Y-01054 was awarded to New Bedford Panoramex Co. (NBP) of Los Angles, California. This was a cost plus incentive fee contract for Phase I (design) of the ILS-RMM project. The contract value was $10M, and appropriations were accounted for by APM-660 under Project 6-01 (RMM) of the NAS Plan. Phase II (production) for the ILS-RMM equipment, contract DTFA01-87-Y-01040, was awarded to NBP as a firm fixed price contract on 10 July 1987. The contract value was $10M. Funds were budgeted under the RMM line item 6-01 (RMM) of the NAS Plan. Funding will be made available to the regions to procure cabling, conduits, connectors, and other supplies and resources as necessary for installation of the ILS-RMM equipment.

61. - 69. RESERVED.

CHAPTER 7. DEPLOYMENT

70. GENERAL DEPLOYMENT ASPECTS. Deployment will be coordinated by APS-440 and the FAA Depot.

71. SITE PREPARATION. No site preparation is required for standard ILS configurations.

72. DELIVERY. Appendix 3 is a listing of all ILS equipment to be retrofitted for RMM under the ILS-RMM project. Dates listed are the median FAA Depot availability dates for the various models of RMM. The program office will accomodate regional requirements by accelerating RMM retrofit kit delivery as possible on a site by site request basis. The program office will control the release of RMM retrofit kits from the FAA Depot by the Project Status Report (PSR) mechanism.

73. INSTALLATION PLAN. Installation shall be performed in two stages. The first stage constists of the modification up to the actual wiring of the ILS drawers. This includes the installation of the sensors, conduit, RMS drawers, radio link antennas, and mounting the BCPS on the wall of the shelter. Each region shall have the option of either completing this first stage themselves with F&E money or having the program office complete this stage through a national contractor. The second stage of the modification shall be performed as an EEM by the electronic technician responsible for the ILS. This consists of wiring the ILS drawers and completing test after modification and site shakedown procedures as required.

74. - 79. RESERVED.

CHAPTER 8. VERIFICATION

80. FACTORY VERIFICATION. The resident QRO at the contractor's facility will ensure that factory verification is performed in accordance with the contract requirements. The contractor will perform the following three production tests in the factory prior to assembly of the EEM: (1) Board Level In Circuit Test, (2) Board Level Functional Test, and (3) Drawer Level Functional Test. After assembly of the EEM, a Production Test is administered to each unit and a Type Test is administered on a representative sample of units. A Production Acceptance Test is administered to qualify each type RMS, the LCU and the BCPS. Design Qualification Testing is completed in Phase I.

81. CHECKOUT. Self diagnostics and an abbreviated Shakedown test procedure, supplied by ACT-110, is used by the system installer to verify the integrity of the EEM.

82. CONTRACTOR INTEGRATION TESTING. N/A

83. CONTRACTOR ACCEPTANCE INSPECTION. N/A

84. FAA INTEGRATION TESTING. ACT-110 shall develop and conduct Integration Test Plan and Procedures in accordance with FAA Order 1810.4, ADL Test and Evaluation Program. Testing of the MPS interface will be done with the MPS simulator. When the IMCS is completed, testing with the MPS will ensure the integrity of the system. Integration testing ensures that the interface to the MPS conforms with NAS-MD-790, and that the overall system meets functional and performance requirements of NAS-SS-1000.

85. SHAKEDOWN AND CHANGEOVER. ASM-150 shall conduct shakedown test and evaluation in accordance with Order 1810.4, ADL Test and Evaluation Program. To confirm the integrity of the EEM manuals, ASM-150 shall observe the installation of the first production model at Chico, California, beginning in April 1988. This will ensure that the manuals are adequate for the EEM procedure. ASM-150 shall also evaluate the paragraph 15. TEST AFTER MODIFICATION. to determine whether it is adequate for site shakedown after installation, and shall work in coordination with the installation technicians and the project manager to develop adequate shakedown procedures. If ASM-150 feels that additional shakedown testing on all RMS types is required, this shall be coordinated with the project manager. ASM-160 will perform interface tests with the IMCS software on the MPS to ensure end-to-end operational integrity. ACT-100 is responsible for determining the loading requirements of the MPS computers.

86. - 89. RESERVED.

CHAPTER 9. INTEGRATED LOGISTICS SUPPORT

90. GENERAL. The National Airspace Integrated Logistics Support (NAILS) program for the ILS-RMM is guided by FAA Order 1800.58, NAILS Policy 7/2/87, ILS-RMM Specification FAA-E-2750/1/2/3, and Contract DTFA01-87-Y-01040. NAILS is designed to ensure that the most appropriate, cost effective, and effective logistics support requirements have been programmed for all operational sites, the FAA Academy, the FAA Depot, and the FAA Technical Center. The current contract, which has advanced past the solicitation stage, required that the project manager assess the impact of incorporating the NAILS element requirements into the project by an assessment of:

a. Supportability requirements.

b. Cost and schedule impact.

c. Cost versus life-cycle benefits.

d. Development/production/implementation phase of the subsystem.

e. Contractual limitation.

f. Operational requirements.

g. Maintenance concept.

h. Training.

91. MAINTENANCE CONCEPT. APS-440 will provide for regional sparing of ILS-RMM LRUs (Lowest Replaceable Units). Sparing is provided on a 1 for 3 basis with the region responsible for distributing the spares. APS-440 recommends that the region spare one ILS-RMM site that is central to three sites. The AF workforce will identify a failed LRU, send it to the FAA Depot, and obtain a spare from the closest spared site. The FAA Depot will use contractor repair service (CRS) to repair the LRUs and restock the region. The region will replace spares at the spared site with repaired LRUs from the FAA Depot. CRS is planned for the period of production. After CRS options expire, the repair technology will be transferred to the FAA Depot. There is no Air Traffic training requirement.

92. TRAINING. A subsystem training plan has been developed for the ILS-RMM project, and is currently in review. The plan provides a summary of the training requirements and schedules for the project. It is a communication and coordination plan which contains planning data requiring coordination with all responsible offices. The major training plan issues are discussed below.

a. Training Assumptions. Assumptions unique to Airway Facilities training:

(1) The contractor, New Bedford Panoramex, will conduct five classes (ARMS Maintenance Course, contractor course number 48072).

(2) The FAA Academy will send instructor personnel to contractor classes. This cadre of instructors will establish training at the FAA Academy.

(3) The FAA Academy will conduct the remaining classes necessary to satisfy the system implementation schedule (Academy course number 40270).

b. Training Requirements. Airway Facilities training addresses the maintenance concept, training program, and class schedules. Maintenance onsite will be conducted to the board level. Boards needing repair will be sent to the FAA Depot for repair. The contractor will provide a lecture-laboratory training program for maintenance of the ILS-RMM in accordance with Airport Remote Monitoring System (ARMS) Maintenance Training contract DTFA01-87-Y-01046 and FAA-STD-028, Contract Training Programs.

93. SUPPORT TOOLS AND TEST EQUIPMENT. No new support tools or test equipment are required. APS-200 will supply the MDTs needed to operate ILS-RMM.

94. SUPPLY SUPPORT. The provisioning requirements for spare parts will be in accordance with FAA Specifications FAA-G-1210d, Provisioning Technical Documentation, and FAA-G-1375b, Spare Parts-Peculiar for Electronic, Electrical and Mechanical Equipment. Also see paragraph 91. MAINTENANCE CONCEPT for more details.

95. VENDOR DATA AND TECHNICAL MANUALS. Vendor data and Technical manuals are provided under contract by NBP. Each site will be provided with a complete set of technical manuals and associated EEM.

96. EQUIPMENT REMOVAL. None required.

97. FACILITIES. None required.

98. - 99. RESERVED.

APPENDIX 1 LIST OF FAA CONTACTS FOR ILS-RMM PROJECT

CONTRACT ADMINISTRATION

Contract Specialist	Joyce A. Eaton (1) ALG-321	FTS 267-3642 (202) 267-3642
Contracting Officer	William T. Hohe (1) ALG-321	FTS 267-3648 (202) 267-3648
Acting Manager, Comm/NAVAIDS Branch	Gilbert Devey (1) ALG-320	FTS 267-3631 (202) 267-3631

TECHNICAL ADMINISTRATION

Technical Officer	Mike Rivers (1) APS-440	FTS 267-8543 (202) 267-8543
Manager, Current Landing Systems	Frank Roepcke (1) APS-440	FTS 267-8540 (202) 267-8540
Manager, Navigation and Landing Division	Alvin Thomas (1) APS-400	FTS 267-3595 (202) 267-3595

TRAINING

Contract Officer Technical Representative	Virgil Davidson (5) AAC-943B	FTS 747-2125 (405) 686-2125
Training Requirements	Joe Featherston (1) ASM-210	FTS 267-8288 (202) 267-8288
New Equipment Training Manager	Tom Buschbaum (1) APT-300	FTS 267-8030 (202) 267-8030

QUALITY ASSURANCE

Quality & Reliability Officer (QRO)	Delbert Mann (3) ALG-424	FTS 795-6395 (213) 420-0102
Alternate QRO	Don Morris (2) ALG-426	FTS 758-3801 (816) 453-2600 x378

MATERIEL MANAGEMENT

Engineer, Materiel Repair	Dewayne Olterman (5) AAC-445A	FTS 749-2373 (405) 686-2373
Provisioner, Provisioning Spare Parts	Jerry Berry (5) AAC-485B	FTS 749-4661 (405) 686-4661

GOVERNMENT PROPERTY ADMINISTRATION

Industrial Property Mgmt. Specialist Transportation Officer	Shirley Greiner (1) ALG-381	FTS 426-8230 (202) 426-8230

VOUCHER SUBMISSION/PAYMENT INFORMATION

Manager, Accounts Payable Branch	(1) AAA-220	FTS 426-6756 (202) 426-6756

SEI CONTRACTOR LIAISON

Manager, Technical - RMM	Ted Eisen (4) SEIC	FTS 967-5473 (202) 646-5473
Technical - RMM	Calvin S. Miles (4) SEIC	FTS 967-4895 (202) 646-4895
Liaison Agreement	Nick Cantwell (4) SEIC	FTS 967-2380 (202) 646-2380
Finance - C/SSR	Virginia Worthington (4) SEIC	FTS 967-5518 (202) 646-5518
Training	Bill Collins (4) SEIC	FTS 967-5542 (202) 646-5542

NOTE: Numbers in parenthesis designate respective mailing addresses which are listed below.

Mailing Addresses

(1) Federal Aviation Administration
National Headquarters
800 Independence Avenue S.W.
Washington, D.C. 20591

(2) Wilcox Electric
Attn: FAA Quality & Reliability Officer
2001 NE 46th Street
Kansas City, MO 64116

(3) Federal Aviation Administration
4340 Donald Douglas Rd.
Long Beach Airport
Long Beach, CA 90806

(4) Martin Marietta
475 School Street S.W.
Washington, D.C. 20024

(5) Federal Aviation Administration
Mike Monroney Aeronautical Center
P.O. Box 25082
Oklahoma City, OK 73125

APPENDIX 2 LIST OF APPLICABLE DOCUMENTS

FAA ORDER 1320.1C	FAA DIRECTIVES SYSTEM
FAA ORDER 1800.58 (NAILS) POLICY (7/2/87)	NATIONAL AIRSPACE INTEGRATED LOGISTICS SUPPORT
FAA ORDER 1810.4	ADL TEST AND EVALUATION PROGRAM
FAA ORDER 6000.32	MAINTENANCE OF TWO-POINT PRIVATE LINES
FAA-STD-028	CONTRACT TRAINING PROGRAMS
FAA-STD-036	PREPARATION OF PROJECT IMPLEMENTATION PLANS
FAA-G-1210D	PROVISIONING TECHNICAL DOCUMENTATION
FAA-G-1375B	SPARE PARTS-PECULIAR FOR ELECTRONIC, ELECTRICAL AND MECHANICAL EQUIPMENT
FAA ORDER PM 1100.1	PROGRAM ENGINEERING AND MAINTENANCE SERVICE ORGANIZATION HANDBOOK
NAS-SS-1000	FUNCTIONAL AND PERFORMANCE REQUIREMENTS FOR TH NATIONAL AIRSPACE SYSTEM
VOLUME I	GENERAL
VOLUME V	MAINTENANCE AND OPERATIONS SUPPORT ELEMENT

NAS-MD-790

REMOTE MAINTENANCE MONITORING SYSTEM
INTERFACE CONTROL DOCUMENT

MAINTENANCE PROCESSOR SUBSYSTEM
to
REMOTE MONITORING SUBSYSTEMS
and
REMOTE MONITORING SUBSYSTEM CONCENTRATORS

FAA-E-2750 AIRPORT REMOTE MONITORING SYSTEM (ARMS)

FAA-E-2750/1 PART 1: GENERAL REQUIREMENTS

FAA-E-2750/2 PART 2: LINK CONTROL UNIT

FAA-E-2750/3 PART 3: INSTRUMENT LANDING SYSTEM (ILS)
REMOTE MONITORING SUBSYSTEM (RMS)

APPENDIX 3, ILS-RMM Production Phase Site Listing

Alaska Region

Region	State	Location	Loc ID	Runway	Equipment	Model	Note	Avail Date	Comm	Freq	Author Request	MPS
AL	AK	ANIAK	ANI	10	GS	MARK 1D	CAPTURE EFFECT	SEP-1988	RADIO	409.800	R	ZAN
AL	AK	ANIAK	ANI	10	DME	FA-9783	DUAL 1000 WATT		CABLE	409.800	R	ZAN
AL	AK	ANIAK	ANI		LCU				RADIO	409.800	R	ZAN
AL	AK	ANIAK	ANI	10	LOC	MARK 1D	V-RING	SEP-1988	RADIO	409.800	R	ZAN
AL	AK	BARROW	BRW	06	DME	FA-9783			CABLE	409.600	A	ZAN
AL	AK	BARROW	BRW		LCU				LAND LINE	409.600	A	ZAN
AL	AK	BARROW	BRW	06	GS	MARK 1C	NULL REFERENCE	APR-1989	LAND LINE	409.600	A	ZAN
AL	AK	BARROW	BRW	06	LOC	MARK 1A	V-RING	MAY-1989	LAND LINE	409.600	A	ZAN
AL	AK	BETTLES	BTT		LCU				RADIO	409.800	R	ZAN
AL	AK	BETTLES	BTT	01	LOC	MARK 1D		SEP-1988	RADIO	409.800	R	ZAN
AL	AK	DEADHORSE	SCC	04	GS	MARK 1C	NULL REFERENCE	APR-1989	LAND LINE	409.800	?	ZAN
AL	AK	DEADHORSE	SCC		LCU				LAND LINE	409.800	?	ZAN
AL	AK	DEADHORSE	SCC	04	LOC	MARK 1C	V-RING	APR-1989	LAND LINE	409.800	?	ZAN
AL	AK	KODIAK	ADQ	25	GS	MARK 1B	CAPTURE EFFECT	MAY-1989	RADIO	409.800	R	ZAN
AL	AK	KODIAK	ADQ		LCU				RADIO	409.800	R	ZAN
AL	AK	KODIAK	ADQ	25	LOC	MARK 1D	MARK 1E	SEP-1988	RADIO	409.800	R	ZAN
AL	AK	MCGRATH	MCG		LCU				RADIO	409.800	?	ZAN
AL	AK	MCGRATH	MCG	16	LOC	MARK 1E		MAR-1989	RADIO	409.800	?	ZAN
AL	AK	ST MARYS	SMA	16	DME	FA-9783	DUAL 1000 WATT		CABLE	409.800	?	ZAN
AL	AK	ST MARYS	SMA		LCU				LL/SAT	409.800	?	ZAN
AL	AK	ST MARYS	SMA	16	LOC	MARK 1D	DUAL EQUIPMENT	SEP-1988	LL/SAT	409.800	?	ZAN
AL	AK	UNALAKLEET	UNK	14	DME	FA-9783			CABLE	409.800	R	ZAN
AL	AK	UNALAKLEET	UNK		LCU				RADIO	409.800	R	ZAN
AL	AK	UNALAKLEET	UNK	14	LOC	MARK 1E		MAR-1989	RADIO	409.800	R	ZAN
AL	AK	VALDEZ	VDZ		LCU				RADIO	409.575	R	ZAN
AL	AK	VALDEZ	VDZ	24	LOC	MARK 1D		SEP-1988	RADIO	409.575	R	ZAN

Central Region

Region	State	Location	LocID	Runway	Equipment	Model	Note	Avail Date	Comm	Freq	Author Request	MPS
CE	IA	AMES	AMW		LCU				RADIO	409.600	R	ZMP
CE	IA	AMES	AMW	31	DME	FA-9783			CABLE	409.600	R	ZMP
CE	IA	AMES	AMW	31	LOC	MARK 1E		MAR-1989	RADIO	409.600	R	ZMP
CE	IA	BURLINGTON	BRL		LCU				RADIO	409.800	R	ZAU
CE	IA	BURLINGTON	BRL	36	GS	MARK 1B	CAPTURE EFFECT	MAY-1989	RADIO	409.800	R	ZAU
CE	IA	BURLINGTON	BRL	36	LOC	MARK 1B		MAY-1989	RADIO	409.800	R	ZAU
CE	IA	CLINTON	FNO	03	DME	FA-9783			CABLE	409.575	R	ZAU
CE	IA	CLINTON	FNO	03	GS	MARK 1F		FEB-1989	RADIO	409.575	R	ZAU
CE	IA	CLINTON	FNO		LCU				RADIO	409.575	R	ZAU
CE	IA	CLINTON	FNO	03	LOC	MARK 1F		FEB-1989	RADIO	409.575	R	ZAU
CE	IA	DAVENPORT	DVN	14	DME	FA-9783			CABLE	408.825	R	ZAU
CE	IA	DAVENPORT	DVN		LCU				RADIO	408.825	R	ZAU
CE	IA	DAVENPORT	DVN	14	LOC	MARK 1F		FEB-1989	RADIO	408.825	R	ZAU
CE	IA	DUBUQUE	DBQ	31	GS	MARK 1B	CAPTURE EFFECT	MAY-1989	RADIO	409.600	R	ZAU
CE	IA	DUBUQUE	DBQ		LCU				RADIO	409.600	R	ZAU
CE	IA	DUBUQUE	DBQ	31	LOC	MARK 1B		MAY-1989	RADIO	409.600	R	ZAU
CE	IA	OTTUMWA	OTM	31	GS	MARK 1C		MAR-1989	RADIO	409.575	R	ZAU
CE	IA	OTTUMWA	OTM		LCU				RADIO	409.575	R	ZAU
CE	IA	OTTUMWA	OTM	31	LOC	MARK 1C	SOLID STATE MOD	MAR-1989	RADIO	409.575	R	ZAU
CE	KS	DODGE CITY	DCC	14	GS	MARK 1F		FEB-1989	RADIO	409.600	R	ZKC
CE	KS	DODGE CITY	DCC		LCU				RADIO	409.600	R	ZKC
CE	KS	DODGE CITY	DCC	14	LOC	MARK 1F		FEB-1989	RADIO	409.600	R	ZKC
CE	KS	GOODLAND	GLD	30	GS	MARK 1F		FEB-1989	RADIO	409.800	R	ZDV
CE	KS	GOODLAND	GLD		LCU				RADIO	409.800	R	ZDV
CE	KS	GOODLAND	GLD	30	LOC	MARK 1D		SEP-1988	RADIO	409.800	R	ZDV
CE	KS	GREAT BEND	GBD		LCU				RADIO	409.575	R	ZKC
CE	KS	GREAT BEND	GBD	35	LOC	MARK 1E		MAR-1989	RADIO	409.575	R	ZKC
CE	KS	HAYS	HYS		LCU				RADIO	409.800	R	ZKC
CE	KS	HAYS	HYS	34	LOC	MARK 1F		FEB-1989	RADIO	409.800	R	ZKC
CE	KS	LIBERAL	LBL	35	GS	MARK 1D	CAPTURE EFFECT	SEP-1988	RADIO	409.800	R	ZKC
CE	KS	LIBERAL	LBL		LCU				RADIO	409.800	R	ZKC
CE	KS	LIBERAL	LBL	35	LOC	MARK 1D		SEP-1988	RADIO	409.800	R	ZKC
CE	KS	NEWTON	CAC	17	GS	MARK 1E		MAR-1989	RADIO	409.800	R	ZKC
CE	KS	NEWTON	CAC		LCU				RADIO	409.800	R	ZKC
CE	KS	NEWTON	CAC	17	LOC	MARK 1E		MAR-1989	RADIO	409.800	R	ZKC
CE	MO	JEFFERSON CITY	JEF		LCU				RADIO	409.825	R	ZKC
CE	MO	JEFFERSON CITY	JEF	30	LOC	MARK 1C		APR-1989	RADIO	409.825	R	ZKC
CE	MO	JOPLIN	JLN	13	GS	MARK 1F	CAPTURE EFFECT	FEB-1989	LAND LINE	409.600	R	ZKC
CE	MO	JOPLIN	JLN	13	LOC	MARK 1F		FEB-1989	LAND LINE	409.600	R	ZKC
CE	MO	JOPLIN	JLN		LCU				LAND LINE	409.600	R	ZKC
CE	MO	KIRKSVILLE	IRK	36	DME	FA-9783			CABLE	409.600	R	ZKC
CE	MO	KIRKSVILLE	IRK		LCU				RADIO	409.600	R	ZKC
CE	MO	KIRKSVILLE	IRK	36	LOC	MARK 1E		MAR-1989	RADIO	409.600	R	ZKC

CE	NE	KEARNEY	EAR	36	DME FA-9783		CABLE	409.600 R ZMP
CE	NE	KEARNEY	EAR		LCU		RADIO	409.600 R ZMP
CE	NE	KEARNEY	EAR	36	LOC MARK 1E	MAR-1989	RADIO	409.600 R ZMP
CE	NE	NORFOLK	OFK	01	GS MARK 1F	FEB-1989	RADIO	409.825 R ZMP
CE	NE	NORFOLK	OFK		LCU		RADIO	409.825 R ZMP
CE	NE	NORFOLK	OFK	01	LOC MARK 1E	MAR-1989	RADIO	409.825 R ZMP
CE	NE	SCOTTSBLUFF	BFF	12	DME FA-9783		CABLE	409.800 R ZDV
CE	NE	SCOTTSBLUFF	BFF	30	GS MARK 1B	MAY-1989	RADIO	409.800 R ZDV
CE	NE	SCOTTSBLUFF	BFF		LCU		RADIO	409.800 R ZDV
CE	NE	SCOTTSBLUFF	BFF	30	LOC MARK 1B	MAY-1989	RADIO	409.800 R ZDV

Eastern Region

Region	State	Location	Loc ID	Runway	Equipment	Model	Note	Avail Date	Comm	Freq	Auth or Request	MPS
EA	DE	WILMINGTON	ILG	01	GS	MARK 1F		FEB-1989	LAND LINE	409.800	?	ZDC
EA	DE	WILMINGTON	ILG		LCU				LAND LINE	409.800	?	ZDC
EA	DE	WILMINGTON	ILG	01	LOC	MARK 1F		FEB-1989	LAND LINE	409.800	?	ZDC
EA	MD	BALT.(G.MARTIN)	MTN	32	GS	MARK 1D	CAPTURE EFFECT	SEP-1988	RADIO	409.175	R	ZDC
EA	MD	BALT.(G.MARTIN)	MTN		LCU				RADIO	409.175	R	ZDC
EA	MD	BALT.(G.MARTIN)	MTN	32	LOC	MARK 1D		SEP-1988	RADIO	409.175	R	ZDC
EA	MD	CUMBERLAND	CBE		LCU				RADIO	409.600	A	ZOB
EA	MD	CUMBERLAND	CBE	23	LOC	MARK 1E		MAR-1989	RADIO	409.600	A	ZOB
EA	MD	FREDERICK	FDK	23	GS	MARK 1E	CAPTURE EFFECT	MAR-1989	RADIO	413.600	A	ZDC
EA	MD	FREDERICK	FDK		LCU				RADIO	413.600	A	ZDC
EA	MD	FREDERICK	FDK	23	LOC	MARK 1E		MAR-1989	RADIO	413.600	A	ZDC
EA	MD	HAGERSTOWN	HGR	27	GS	MARK 1D		SEP-1988	RADIO	406.250	R	ZDC
EA	MD	HAGERSTOWN	HGR	27	LOC	MARK 1D		SEP-1988	RADIO	406.250	R	ZDC
EA	MD	HAGERSTOWN	HGR		LCU				RADIO	406.250	R	ZDC
EA	MD	SALISBURY	SBY	32	GS	MARK 1B		MAY-1989	RADIO	409.575	A	ZDC
EA	MD	SALISBURY	SBY	32	LOC	MARK 1B		MAY-1989	RADIO	409.575	A	ZDC
EA	MD	SALISBURY	SBY		LCU				RADIO	409.575	A	ZDC
EA	NJ	ATLANTIC CITY	PVO	13	GS	MARK 1F		FEB-1989	LAND LINE	419.025	A	ZDC
EA	NJ	ATLANTIC CITY	PVO	13	LOC	MARK 1F		FEB-1989	LAND LINE	419.025	A	ZDC
EA	NJ	ATLANTIC CITY	PVO		LCU				LAND LINE	419.025	A	ZDC
EA	NJ	MORRISTOWN	MMU	23	GS	MARK 1C		APR-1989	RADIO	415.550	A	ZNY
EA	NJ	MORRISTOWN	MMU		LCU				RADIO	415.550	A	ZNY
EA	NJ	MORRISTOWN	MMU	23	LOC	MARK 1F		FEB-1989	RADIO	415.550	A	ZNY
EA	NJ	WILDWOOD	CEJ	19	LOC	MARK 1E		MAR-1989	RADIO	415.450	A	ZDC
EA	NJ	WILDWOOD	CEJ		LCU				RADIO	415.450	A	ZDC
EA	NY	BATAVIA	GVQ	28	GS	MARK 1F		FEB-1989	RADIO	419.025	A	ZOB
EA	NY	BATAVIA	GVQ		LCU				RADIO	419.025	A	ZOB
EA	NY	BATAVIA	GVQ	28	LOC	MARK 1F		FEB-1989	RADIO	419.025	A	ZOB
EA	NY	BROOKHAVEN	INI	06	GS	MARK 1F		FEB-1989	RADIO	408.525	A	ZNY
EA	NY	BROOKHAVEN	INI	06	LOC	MARK 1F		FEB-1989	RADIO	408.525	A	ZNY
EA	NY	BROOKHAVEN	INI		LCU				RADIO	408.525	A	ZNY
EA	NY	FARMINGDALE	FRG	14	GS	AIL-55		MAY-1989	LAND LINE	409.800	?	ZNY
EA	NY	FARMINGDALE	FRG		LCU				LAND LINE	409.800	?	ZNY
EA	NY	FARMINGDALE	FRG	14	LOC	AIL-55		MAY-1989	LAND LINE	409.800	?	ZNY
EA	NY	ITHICA	ITH	32	GS	MARK 1F		FEB-1989	RADIO	409.600	A	ZNY
EA	NY	ITHICA	ITH		LCU				RADIO	409.600	A	ZNY
EA	NY	ITHICA	ITH	32	LOC	MARK 1F		FEB-1989	RADIO	409.600	A	ZNY
EA	NY	MASSENA	MSS	05	GS	MARK 1D	CAPTURE EFFECT	SEP-1988	RADIO	409.800	A	ZBW
EA	NY	MASSENA	MSS		LCU				RADIO	409.800	A	ZBW
EA	NY	MASSENA	MSS	05	LOC	MARK 1D		SEP-1988	RADIO	409.800	A	ZBW
EA	NY	OGDENSBURG	OGS		LCU				RADIO	408.825	A	ZBW
EA	NY	OGDENSBURG	OGS	27	LOC	MARK 1E		MAR-1989	RADIO	408.825	A	ZBW

EA NY OLEAN	OLE		LCU			RADIO	410.250	A	ZOB
EA NY OLEAN	OLE	22	LOC	MARK 1F	FEB-1989	RADIO	410.250	A	ZOB
EA NY ONEONTA	OZX		LCU			RADIO	409.175	A	ZBW
EA NY ONEONTA	OZX	24	LOC	MARK 1F	FEB-1989	RADIO	409.175	A	ZBW
EA NY PLATTSBURG	PLB	01	GS	MARK 1F	FEB-1989	RADIO	410.300	A	ZBW
EA NY PLATTSBURG	PLB		LCU			RADIO	410.300	A	ZBW
EA NY PLATTSBURG	PLB	01	LOC	MARK 1F	FEB-1989	RADIO	410.300	A	ZBW
EA NY SARANAC LAKE	SLK	23	GS	MARK 1E	MAR-1989	RADIO	413.600	R	ZBW
EA NY SARANAC LAKE	SLK		LCU			RADIO	413.600	R	ZBW
EA NY SARANAC LAKE	SLK	23	LOC	MARK 1E	MAR-1989	RADIO	413.600	R	ZBW
EA NY SCHENECTADY	SCH		LCU			RADIO	410.250	R	ZBW
EA NY SCHENECTADY	SCH	04	LOC	MARK 1F	FEB-1989	RADIO	410.250	R	ZBW
EA NY WELLSVILLE	ELZ		LCU			RADIO	416.875	R	ZOB
EA NY WELLSVILLE	ELZ	28	LOC	MARK 1F	FEB-1989	RADIO	416.875	R	ZOB
EA PA ALLENTOWN	ABE	06	GS	MARK 1F	FEB-1989	LAND LINE	409.600	R	ZNY
EA PA ALLENTOWN	BXY	13	GS	MARK 1D	SEP-1988	RADIO	409.600	R	ZNY
EA PA ALLENTOWN	ABE		LCU			LAND LINE	409.600	R	ZNY
EA PA ALLENTOWN	ABE	06	LOC	MARK 1F	FEB-1989	LAND LINE	409.600	R	ZNY
EA PA ALLENTOWN	BXY	13	LOC	MARK 1D	SEP-1988	RADIO	409.600	R	ZNY
EA PA ALTOONA	AOO	20	GS	MARK 1F	FEB-1989	LAND LINE	409.800	?	ZOB
EA PA ALTOONA	AOO		LCU			LAND LINE	409.800	?	ZOB
EA PA ALTOONA	AOO	20	LOC	MARK 1F	FEB-1989	LAND LINE	409.800	?	ZOB
EA PA BEAVER FALLS	BVI		LCU			RADIO	409.600	R	ZOB
EA PA BEAVER FALLS	BVI	10	LOC	MARK 1E	MAR-1989	RADIO	409.600	R	ZOB
EA PA BRADFORD	BFD	32	GS	AIL-55	MAY-1989	RADIO	409.600	R	ZOB
EA PA BRADFORD	BFD		LCU			RADIO	409.600	R	ZOB
EA PA BRADFORD	BFD	32	LOC	AIL-55	MAY-1989	RADIO	409.600	R	ZOB
EA PA BUTLER	BTP	08	GS	MARK 1F	FEB-1989	RADIO	409.800	A	ZOB
EA PA BUTLER	BTP		LCU			RADIO	409.800	A	ZOB
EA PA BUTLER	BTP	08	LOC	MARK 1F	FEB-1989	RADIO	409.800	A	ZOB
EA PA CAP CTY-HARRISB	CXY	08	GS	MARK 1B	MAY-1989	LAND LINE	409.575	R	ZNY
EA PA CAP CTY-HARRISB	CXY		LCU			LAND LINE	409.575	R	ZNY
EA PA CAP CTY-HARRISB	CXY	08	LOC	MARK 1F	FEB-1989	LAND LINE	409.575	R	ZNY
EA PA COATESVILLE	MQS	29	GS	MARK 1E	MAR-1989	RADIO	409.050	R	ZNY
EA PA COATESVILLE	MQS		LCU			RADIO	409.050	R	ZNY
EA PA COATESVILLE	MQS	29	LOC	MARK 1E	MAR-1989	RADIO	409.050	R	ZNY
EA PA ERIE	AWY	24	GS	MARK 1F	FEB-1989	LAND LINE	408.000	A	ZOB
EA PA ERIE	ERI	06	GS	MARK 1F	FEB-1989	LAND LINE	408.000	A	ZOB
EA PA ERIE	ERI		LCU			LAND LINE	408.000	A	ZOB
EA PA ERIE	ERI	06	LOC	MARK 1F	FEB-1989	LAND LINE	408.000	A	ZOB
EA PA ERIE	AWY	24	LOC	MARK 1F	FEB-1989	LAND LINE	408.000	A	ZOB
EA PA FRANKLIN	FKL	20	GS	MARK 1D	SEP-1988	RADIO	409.575	R	ZOB
EA PA FRANKLIN	FKL		LCU			RADIO	409.575	R	ZOB
EA PA FRANKLIN	FKL	20	LOC	MARK 1D	SEP-1988	RADIO	409.575	R	ZOB
EA PA HAZLETON	HZL		LCU			RADIO	409.075	A	ZNY
EA PA HAZLETON	HZL	28	LOC	MARK 1A	MAY-1989	RADIO	409.075	A	ZNY
EA PA JOHNSTOWN	JST	33	GS	MARK 1B	MAY-1989	RADIO	409.850	R	ZOB
EA PA JOHNSTOWN	JST		LCU			RADIO	409.850	R	ZOB
EA PA JOHNSTOWN	JST	33	LOC	MARK 1B	MAY-1989	RADIO	409.850	R	ZOB
EA PA LANCASTER	LNS	08	GS	MARK 1A	MAY-1989	RADIO	409.300	A	ZNY
EA PA LANCASTER	LNS		LCU			RADIO	409.300	A	ZNY
EA PA LANCASTER	LNS	08	LOC	MARK 1A	MAY-1989	RADIO	409.300	A	ZNY
EA PA LATROBE	LBE	23	GS	AIL-55	MAY-1989	RADIO	419.025	R	ZOB
EA PA LATROBE	LBE		LCU			RADIO	419.025	R	ZOB
EA PA LATROBE	LBE	23	LOC	AIL-55	MAY-1989	RADIO	419.025	R	ZOB
EA PA MEADVILLE	GKJ		LCU			RADIO	409.850	R	ZOB
EA PA MEADVILLE	GKJ	25	LOC	MARK 1F	FEB-1989	RADIO	409.850	R	ZOB

EA	PA	N.E.PHILADELPHI	PNE	24	GS	AIL-55		MAY-1989	LAND LINE	409.800	? ZNY
EA	PA	N.E.PHILADELPHI	PNE		LCU				LAND LINE	409.800	? ZNY
EA	PA	N.E.PHILADELPHI	PNE	24	LOC	AIL-55		MAY-1989	LAND LINE	409.800	? ZNY
EA	PA	PHILLIPSBURG	PSB	16	GS	MARK 1C		APR-1989	RADIO	409.825	R ZDC
EA	PA	PHILLIPSBURG	PSB		LCU				RADIO	409.825	R ZDC
EA	PA	PHILLIPSBURG	PSB	16	LOC	MARK 1C		APR-1989	RADIO	409.825	R ZDC
EA	PA	POTTSTOWN	PTW		LCU				RADIO	409.800	? ZDC
EA	PA	POTTSTOWN	PTW	28	LOC	MARK 1F		FEB-1989	RADIO	409.800	? ZDC
EA	PA	READING	RDG	36	GS	MARK 1F		FEB-1989	LAND LINE	409.825	R ZNY
EA	PA	READING	RDG		LCU				LAND LINE	409.825	R ZNY
EA	PA	READING	RDG	36	LOC	MARK 1F		FEB-1989	LAND LINE	409.825	R ZNY
EA	PA	REEDSVILLE	RVL		LCU				RADIO	409.800	A ZNY
EA	PA	REEDSVILLE	RVL	06	LOC	MARK 1A		MAY-1989	RADIO	409.800	A ZNY
EA	PA	ST MARYS	OYM	28	DME	FA-9783			CABLE	413.600	R ZOB
EA	PA	ST MARYS	OYM		LCU				RADIO	413.600	R ZOB
EA	PA	ST MARYS	OYM	28	LOC	MARK 1F		FEB-1989	RADIO	413.600	R ZOB
EA	PA	STATE COLLEGE	UNV	24	GS	MARK 1E	CAPTURE EFFECT	MAR-1989	RADIO	409.175	R ZNY
EA	PA	STATE COLLEGE	UNV		LCU				RADIO	409.175	R ZNY
EA	PA	STATE COLLEGE	UNV	24	LOC	MARK 1E		MAR-1989	RADIO	409.175	R ZNY
EA	PA	WILLIAMSPORT	IPT	27	GS	MARK 1C		APR-1989	LAND LINE	409.800	? ZNY
EA	PA	WILLIAMSPORT	IPT		LCU				LAND LINE	409.800	? ZNY
EA	PA	WILLIAMSPORT	IPT	27	LOC	MARK 1A		MAY-1989	LAND LINE	409.800	? ZNY
EA	VA	DANVILLE	DAN	02	GS	MARK 1E	CAPTURE EFFECT	MAR-1989	RADIO	410.250	R ZDC
EA	VA	DANVILLE	DAN		LCU				RADIO	410.250	R ZDC
EA	VA	DANVILLE	DAN	02	LOC	MARK 1E		MAR-1989	RADIO	410.250	R ZDC
EA	VA	DUBLIN	PSK	06	GS	MARK 1B		MAY-1989	RADIO	409.600	R ZTL
EA	VA	DUBLIN	PSK		LCU				RADIO	409.600	R ZTL
EA	VA	DUBLIN	PSK	06	LOC	MARK 1B		MAY-1989	RADIO	409.600	R ZTL
EA	VA	HOT SPRINGS	HSP	24	GS	MARK 1F		FEB-1989	RADIO	409.850	R ZDC
EA	VA	HOT SPRINGS	HSP		LCU				RADIO	409.850	R ZDC
EA	VA	HOT SPRINGS	HSP	24	LOC	MARK 1F		FEB-1989	RADIO	409.850	R ZDC
EA	VA	LYNCHBURG	LYH	03	GS	MARK 1F		FEB-1989	LAND LINE	409.800	A ZDC
EA	VA	LYNCHBURG	LYH		LCU				LAND LINE	409.800	A ZDC
EA	VA	LYNCHBURG	LYH	03	LOC	MARK 1F		FEB-1989	LAND LINE	409.800	A ZDC
EA	VA	MANASSAS	HEF	16L	GS	MARK 1F		FEB-1989	RADIO	409.475	A ZDC
EA	VA	MANASSAS	HEF		LCU				RADIO	409.475	A ZDC
EA	VA	MANASSAS	HEF	16L	LOC	MARK 1F		FEB-1989	RADIO	409.475	A ZDC
EA	VA	STAUNTON	SHD	04	GS	MARK 1C	CAPTURE EFFECT	APR-1989	RADIO	409.175	R ZDC
EA	VA	STAUNTON	SHD		LCU				RADIO	409.175	R ZDC
EA	VA	STAUNTON	SHD	04	LOC	MARK 1F		FEB-1989	RADIO	409.175	R ZDC
EA	WV	BECKLEY	MQU	19	GS	MARK 1D	CAPTURE EFFECT	SEP-1988	RADIO	409.175	R ZTL
EA	WV	BECKLEY	MQU		LCU				RADIO	409.175	R ZTL
EA	WV	BECKLEY	MQU	19	LOC	MARK 1D		SEP-1988	RADIO	409.175	R ZTL
EA	WV	BLUEFIELD	BLF	23	GS	MARK 1D		SEP-1988	RADIO	409.825	R ZDC
EA	WV	BLUEFIELD	BLF		LCU				RADIO	409.825	R ZDC
EA	WV	BLUEFIELD	BLF	23	LOC	MARK 1D		SEP-1988	RADIO	409.825	R ZDC
EA	WV	ELKINS	OUW	22	DME	FA-9783			CABLE	410.300	R ZDC
EA	WV	ELKINS	OUW		LCU				RADIO	410.300	R ZDC
EA	WV	ELKINS	OUW	22	LOC	MARK 1D		SEP-1988	RADIO	410.300	R ZDC
EA	WV	LEWISBURG	LWB	04	GS	MARK 1C		APR-1989	RADIO	409.825	R ZDC
EA	WV	LEWISBURG	LWB		LCU				RADIO	409.825	R ZDC
EA	WV	LEWISBURG	LWB	04	LOC	MARK 1C		APR-1989	RADIO	409.825	R ZDC
EA	WV	MARTINSBURG	EXW	26	GS	MARK 1E		MAR-1989	RADIO	408.175	A ZDC
EA	WV	MARTINSBURG	EXW		LCU				RADIO	408.175	A ZDC
EA	WV	MARTINSBURG	EXW	26	LOC	MARK 1B		MAY-1989	RADIO	408.175	A ZDC

EA	WV	MORGANTOWN	MGW	18	GS	MARK 1B	MAY-1989	RADIO	413.600	R ZOB
EA	WV	MORGANTOWN	MGW		LCU			RADIO	413.600	R ZOB
EA	WV	MORGANTOWN	MGW	18	LOC	MARK 1B	MAY-1989	RADIO	413.600	R ZOB
EA	WV	PARKERSBURG	PKB	03	GS	MARK 1B	MAY-1989	RADIO	409.800	R ZID
EA	WV	PARKERSBURG	PKB		LCU			RADIO	409.800	R ZID
EA	WV	PARKERSBURG	PKB	03	LOC	MARK 1A	MAY-1989	RADIO	409.800	R ZID
EA	WV	WHEELING	HLG	03	GS	MARK 1F	FEB-1989	RADIO	409.175	R ZOB
EA	WV	WHEELING	HLG		LCU			RADIO	409.175	R ZOB
EA	WV	WHEELING	HLG	03	LOC	MARK 1F	FEB-1989	RADIO	409.175	R ZOB

Great Lakes Region

Region	State	Location	Loc Ident	Runway	Equipment	Model	Note	Avail Date	Comm	Author Req Freq	MPS
GL	IL	AURORA	ARR	09	GS	MARK 1F		FEB-1989	RADIO	410.300 R	ZAU
GL	IL	AURORA	ARR		LCU				RADIO	410.300 R	ZAU
GL	IL	AURORA	ARR	09	LOC	MARK 1F		FEB-1989	RADIO	410.300 R	ZAU
GL	IL	BLOOMINGTON	BMI	29	GS	MARK 1C		APR-1989	RADIO	409.825 R	ZAU
GL	IL	BLOOMINGTON	BMI		LCU				RADIO	409.825 R	ZAU
GL	IL	BLOOMINGTON	BMI	29	LOC	MARK 1C		APR-1989	RADIO	409.825 R	ZAU
GL	IL	CAHOKIA STLOUIS	CPS	30	GS	MARK 1E	CAPTURE EFFECT	MAR-1989	RADIO	409.850 R	ZID
GL	IL	CAHOKIA STLOUIS	CPS		LCU				RADIO	409.850 R	ZID
GL	IL	CAHOKIA STLOUIS	CPS	30	LOC	MARK 1D		SEP-1988	RADIO	409.850 R	ZID
GL	IL	CHAMPAIGN	CMI	31	GS	MARK 1F		FEB-1989	LAND LINE	409.175 R	ZID
GL	IL	CHAMPAIGN	CMI		LCU				LAND LINE	409.175 R	ZID
GL	IL	CHAMPAIGN	CMI	31	LOC	MARK 1F		FEB-1989	LAND LINE	409.175 R	ZID
GL	IL	CHICAGO DUPAGE	DPA	10	GS	MARK 1D	CAPTURE EFFECT	SEP-1988	RADIO	408.825 R	ZAU
GL	IL	CHICAGO DUPAGE	DPA		LCU				RADIO	408.825 R	ZAU
GL	IL	CHICAGO DUPAGE	DPA	10	LOC	MARK 1A		MAY-1989	RADIO	408.825 R	ZAU
GL	IL	CHICAGO(MIDWAY)	HKH	04R	GS	MARK 1B		MAY-1989	LAND LINE	409.600 R	ZAU
GL	IL	CHICAGO(MIDWAY)	MXT	31L	GS	MARK 1F	CAPTURE EFFECT	FEB-1989	LAND LINE	409.600 R	ZAU
GL	IL	CHICAGO(MIDWAY)	MDW	13R	GS	MARK 1F	CAPTURE EFFECT	FEB-1989	LAND LINE	409.600 R	ZAU
GL	IL	CHICAGO(MIDWAY)	MDW		LCU				LAND LINE	409.600 R	ZAU
GL	IL	CHICAGO(MIDWAY)	HKH	04R	LOC	MARK 1B		MAY-1989	LAND LINE	409.600 R	ZAU
GL	IL	CHICAGO(MIDWAY)	MXT	31L	LOC	MARK 1F		FEB-1989	LAND LINE	409.600 R	ZAU
GL	IL	CHICAGO(MIDWAY)	MDW	13R	LOC	MARK 1F		FEB-1989	LAND LINE	409.600 R	ZAU
GL	IL	DANVILLE	DNV	21	GS	MARK 1D	CAPTURE EFFECT	SEP-1988	RADIO	409.850 R	ZID
GL	IL	DANVILLE	DNV		LCU				RADIO	409.850 R	ZID
GL	IL	DANVILLE	DNV	21	LOC	MARK 1D		SEP-1988	RADIO	409.850 R	ZID
GL	IL	GALESBURG	GBG	02	GS	MARK 1D	CAPTURE EFFECT	SEP-1988	RADIO	409.175 R	ZID
GL	IL	GALESBURG	GBG		LCU				RADIO	409.175 R	ZID
GL	IL	GALESBURG	GBG	02	LOC	MARK 1D		SEP-1988	RADIO	409.175 R	ZID
GL	IL	KANKAKEE	IKK	04	GS	MARK 1E		MAR-1989	RADIO	409.575 R	ZID
GL	IL	KANKAKEE	IKK		LCU				RADIO	409.575 R	ZID
GL	IL	KANKAKEE	IKK	04	LOC	MARK 1E		MAR-1989	RADIO	409.575 R	ZID
GL	IL	MARION	MWA	20	GS	MARK 1F	CAPTURE EFFECT	FEB-1989	RADIO	408.825 R	ZID
GL	IL	MARION	MWA		LCU				RADIO	408.825 R	ZID
GL	IL	MARION	MWA	20	LOC	MARK 1F		FEB-1989	RADIO	408.825 R	ZID
GL	IL	MATTOON	MTO	29	GS	MARK 1F		FEB-1989	RADIO	408.825 R	ZID
GL	IL	MATTOON	MTO		LCU				RADIO	408.825 R	ZID
GL	IL	MATTOON	MTO	29	LOC	MARK 1F		FEB-1989	RADIO	408.825 R	ZID
GL	IL	PEORIA	PIA	30	GS	MARK 1F		FEB-1989	LAND LINE	409.600 R	ZID
GL	IL	PEORIA	GZX	12	GS	MARK 1F	CAPTURE EFFECT	FEB-1989	LAND LINE	409.600 R	ZID
GL	IL	PEORIA	PIA		LCU				LAND LINE	409.600 R	ZID
GL	IL	PEORIA	GZX	12	LOC	MARK 1F		FEB-1989	LAND LINE	409.600 R	ZID
GL	IL	PEORIA	PIA	30	LOC	MARK 1F		FEB-1989	LAND LINE	409.600 R	ZID
GL	IL	QUINCY	UIN	03	GS	MARK 1F		FEB-1989	LANDLINE	409.825 R	ZID
GL	IL	QUINCY	UIN		LCU				LAND LINE	409.825 R	ZID
GL	IL	QUINCY	UIN	03	LOC	MARK 1F		FEB-1989	LAND LINE	409.825 R	ZID

GL	IL	SPRINGFIELD	SPI	04	GS	MARK 1F		FEB-1989	LAND LINE	409.575 R ZID
GL	IL	SPRINGFIELD	LQY	22	GS	MARK 1E		MAR-1989	LAND LINE	409.575 R ZID
GL	IL	SPRINGFIELD	SPI		LCU				LAND LINE	409.575 R ZID
GL	IL	SPRINGFIELD	SPI	04	LOC	MARK 1F		FEB-1989	LAND LINE	409.575 R ZID
GL	IL	SPRINGFIELD	LQY	22	LOC	MARK 1E		MAR-1989	LAND LINE	409.575 R ZID
GL	IL	STERLING	SQI	25	GS	MARK 1C		APR-1989	RADIO	409.850 R ZAU
GL	IL	STERLING	SQI		LCU				RADIO	409.850 R ZAU
GL	IL	STERLING	SQI	25	LOC	MARK 1C		APR-1989	RADIO	409.850 R ZAU
GL	IL	WAUKEGAN	UGN	23	GS	MARK 1F		FEB-1989	LAND LINE	416.875 R ZAU
GL	IL	WAUKEGAN	UGN		LCU				LAND LINE	416.875 R ZAU
GL	IL	WAUKEGAN	UGN	23	LOC	MARK 1A		MAY-1989	LAND LINE	416.875 R ZAU
GL	IN	BLOOMINGTON-MC	BMG	35	GS	MARK 1D	1F CAP. EFF. KIT	SEP-1988	RADIO	409.800 R ZID
GL	IN	BLOOMINGTON-MC	BMG		LCU				RADIO	409.800 R ZID
GL	IN	BLOOMINGTON-MC	BMG	35	LOC	MARK 1D		SEP-1988	RADIO	409.800 R ZID
GL	IN	GARY	GYY	30	GS	MARK 1E	CAPTURE EFFECT	MAR-1989	RADIO	409.800 R ZAU
GL	IN	GARY	GYY		LCU				LAND LINE	409.800 R ZAU
GL	IN	GARY	GYY	30	LOC	MARK 1A		MAY-1989	LAND LINE	409.800 R ZAU
GL	IN	KOKOMO	OKK	23	GS	MARK 1E	CAPTURE EFFECT	MAR-1989	RADIO	409.600 R ZID
GL	IN	KOKOMO	OKK		LCU				RADIO	409.600 R ZID
GL	IN	KOKOMO	OKK	23	LOC	MARK 1E		MAR-1989	RADIO	409.600 R ZID
GL	IN	MT. COMFORT	MQJ	25	GS	MARK 1F	CAPTURE EFFECT	FEB-1989	RADIO	409.175 R ZID
GL	IN	MT. COMFORT	MQJ		LCU				RADIO	409.175 R ZID
GL	IN	MT. COMFORT	MQJ	25	LOC	MARK 1F		FEB-1989	RADIO	409.175 R ZID
GL	IN	VALPARAISO	VPZ	27	GS	AIL-55		MAY-1989	LAND LINE	409.825 R ZID
GL	IN	VALPARAISO	VPZ		LCU				LAND LINE	409.825 R ZID
GL	IN	VALPARAISO	VPZ	27	LOC	MARK 1F		FEB-1989	LAND LINE	409.825 R ZID
GL	MI	BENTON HARBOR	BEH	27	GS	MARK 1B		MAY-1989	RADIO	409.175 R MCH
GL	MI	BENTON HARBOR	BEH		LCU				LAND LINE	409.175 R MCH
GL	MI	BENTON HARBOR	BEH	27	LOC	MARK 1F		FEB-1989	LAND LINE	409.175 R MCH
GL	MI	CHERRY CAPITAL	TVC	28	GS	MARK 1A		MAY-1989	RADIO	409.800 ? MCH
GL	MI	CHERRY CAPITAL	TVC		LCU				RADIO	409.800 ? MCH
GL	MI	CHERRY CAPITAL	TVC	28	LOC	MARK 1A		MAY-1989	RADIO	409.800 ? MCH
GL	MI	FLINT	TUN	27	GS	MARK 1F	CAPTURE EFFECT	FEB-1989	LAND LINE	408.825 R MCH
GL	MI	FLINT	FNT	09	GS	MARK 1F		FEB-1989	LAND LINE	408.825 R MCH
GL	MI	FLINT	FNT		LCU				LAND LINE	408.825 R MCH
GL	MI	FLINT	FNT	09	LOC	MARK 1F		FEB-1989	LAND LINE	408.825 R MCH
GL	MI	FLINT	TUN	27	LOC	MARK 1F		FEB-1989	LAND LINE	408.825 R MCH
GL	MI	GRAND RAPIDS	CYZ	08R	GS	MARK 1F		FEB-1989	LAND LINE	409.575 R MCH
GL	MI	GRAND RAPIDS	GRR	26L	GS	MARK 1E		MAR-1989	LAND LINE	409.575 R MCH
GL	MI	GRAND RAPIDS	GRR		LCU				LAND LINE	409.575 R MCH
GL	MI	GRAND RAPIDS	CYZ	08R	LOC	MARK 1F		FEB-1989	LAND LINE	409.575 R MCH
GL	MI	GRAND RAPIDS	GRR	26L	LOC	MARK 1F		FEB-1989	LAND LINE	409.575 R MCH
GL	MI	IRONWOOD	IWD	27	GS	MARK 1F	CAPTURE EFFECT	FEB-1989	RADIO	410.300 R MCH
GL	MI	IRONWOOD	IWD		LCU				RADIO	410.300 R MCH
GL	MI	IRONWOOD	IWD	27	LOC	MARK 1F		FEB-1989	RADIO	410.300 R MCH
GL	MI	JACKSON	JXN	23	GS	MARK 1F	CAPTURE EFFECT	FEB-1989	LAND LINE	408.525 R MCH
GL	MI	JACKSON	JXN		LCU				LAND LINE	408.525 R MCH
GL	MI	JACKSON	JXN	23	LOC	MARK 1F		FEB-1989	LAND LINE	408.525 R MCH
GL	MI	MENOMINEE	TNQ	14	GS	MARK 1F	CAPTURE EFFECT	FEB-1989	RADIO	409.800 ? MCH
GL	MI	MENOMINEE	TNQ		LCU				RADIO	409.800 ? MCH
GL	MI	MENOMINEE	TNQ	14	LOC	MARK 1F		FEB-1989	RADIO	409.800 ? MCH
GL	MI	PONTIAC	PTK	09R	GS	MARK 1B		MAY-1989	RADIO	409.800 ? MCH
GL	MI	PONTIAC	PTK		LCU				RADIO	409.800 ? MCH
GL	MI	PONTIAC	PTK	09R	LOC	MARK 1B		MAY-1989	RADIO	409.800 ? MCH
GL	MN	DULUTH	JUD	27	GS	MARK 1F		FEB-1989	LAND LINE	409.800 ? ZMP
GL	MN	DULUTH	DLH	09	GS	MARK 1F	CAPTURE EFFECT	FEB-1989	LAND LINE	409.800 ? ZMP
GL	MN	DULUTH	DLH		LCU				LAND LINE	409.800 ? ZMP
GL	MN	DULUTH	DLH	09	LOC	MARK 1F		FEB-1989	LAND LINE	409.800 ? ZMP
GL	MN	DULUTH	JUD	27	LOC	MARK 1F		FEB-1989	LAND LINE	409.800 ? ZMP

GL MN LAKEVILLE	LVN 29	GS	MARK 1F			FEB-1989	RADIO	409.800 ?	ZMP
GL MN LAKEVILLE	LVN	LCU					RADIO	409.800 ?	ZMP
GL MN LAKEVILLE	LVN 29	LOC	MARK 1F			FEB-1989	RADIO	409.800 ?	ZMP
GL MN MANKATO	MKT	LCU					RADIO	409.800 ?	ZMP
GL MN MANKATO	MKT 33	LOC	MARK 1F			FEB-1989	RADIO	409.800 ?	ZMP
GL MN ROCHESTER MUNIC	RST 31	GS	MARK 1F			FEB-1989	LAND LINE	409.800 ?	ZMP
GL MN ROCHESTER MUNIC	RST	LCU					LAND LINE	409.800 ?	ZMP
GL MN ROCHESTER MUNIC	RST 31	LOC	MARK 1F			FEB-1989	LAND LINE	409.800 ?	ZMP
GL ND WILLISTON	SFW 29	GS	MARK 1F	CAPTURE EFFECT		FEB-1989	RADIO	409.800 ?	ZMP
GL ND WILLISTON	SFW	LCU					RADIO	409.800 ?	ZMP
GL ND WILLISTON	SFW 29	LOC	MARK 1F			FEB-1989	RADIO	409.800 ?	ZMP
GL OH AKRON CANTON	GGZ 23	GS	MARK 1D			SEP-1988	RADIO	409.800 ?	ZOB
GL OH AKRON CANTON	RGO 19	GS	MARK 1F	CAPTURE EFFECT		FEB-1989	LAND LINE	409.800 ?	ZOB
GL OH AKRON CANTON	CAK 01	GS	MARK 1F	CAPTURE EFFECT		FEB-1989	LAND LINE	409.800 ?	ZOB
GL OH AKRON CANTON	CAK	LCU					LAND LINE	409.800 ?	ZOB
GL OH AKRON CANTON	GGZ 23	LOC	MARK 1D			SEP-1988	RADIO	409.800 ?	ZOB
GL OH AKRON CANTON	RGO 19	LOC	MARK 1F			FEB-1989	LAND LINE	409.800 ?	ZOB
GL OH AKRON CANTON	CAK 01	LOC	MARK 1F			FEB-1989	LAND LINE	409.800 ?	ZOB
GL OH AKRON FULTON	AKR 25	DME	FA-9783				CABLE	409.800 ?	ZOB
GL OH AKRON FULTON	AKR	LCU					RADIO	409.800 ?	ZOB
GL OH AKRON FULTON	AKR 25	LOC	MARK 1F			FEB-1989	RADIO	409.800 ?	ZOB
GL OH BURKE/CLEVELAND	BFT	LCU					LAND LINE	409.800 ?	ZOB
GL OH BURKE/CLEVELAND	BFT 24R	LOC	MARK 1F			FEB-1989	LAND LINE	409.800 ?	ZOB
GL OH COLUMBUS OH.ST.	OSU 09R	GS	MARK 1D			SEP-1988	RADIO	409.800 ?	ZID
GL OH COLUMBUS OH.ST.	OSU	LCU					RADIO	409.800 ?	ZID
GL OH COLUMBUS OH.ST.	OSU 09R	LOC	MARK 1D			SEP-1988	RADIO	409.800 ?	ZID
GL OH CUYAHOGA COUNTY	CGF 23	GS	MARK 1C			APR-1989	RADIO	409.800 ?	ZOB
GL OH CUYAHOGA COUNTY	CGF	LCU					RADIO	409.800 ?	ZOB
GL OH CUYAHOGA COUNTY	CGF 23	LOC	MARK 1C			APR-1989	RADIO	409.800 ?	ZOB
GL OH LUNKEN/CINCINNA	LUK 20L	GS	MARK 1F			FEB-1989	RADIO	409.800 ?	ZID
GL OH LUNKEN/CINCINNA	LUK	LCU					RADIO	409.800 ?	ZID
GL OH LUNKEN/CINCINNA	LUK 20L	LOC	MARK 1F			FEB-1989	RADIO	409.800 ?	ZID
GL OH MIDDLETOWN	MWO	LCU					LAND LINE	409.800 ?	ZID
GL OH MIDDLETOWN	MWO 23	LOC	MARK 1F			FEB-1989	LAND LINE	409.800 ?	ZID
GL SD YANKTON	YKN 31	GS	MARK 1F			FEB-1989	RADIO	409.800 ?	ZMP
GL SD YANKTON	YKN	LCU					RADIO	409.800 ?	ZMP
GL SD YANKTON	YKN 31	LOC	MARK 1F			FEB-1989	RADIO	409.800 ?	ZMP
GL WI APPLETON	ATW 03	GS	AIL-55			MAY-1989	LAND LINE	409.800 ?	ZAU
GL WI APPLETON	ATW	LCU					RADIO	409.800 ?	ZAU
GL WI APPLETON	ATW 03	LOC	AIL-55			MAY-1989	RADIO	409.800 ?	ZAU
GL WI LA CROSSE	LSE 18	GS	MARK 1B			MAY-1989	RADIO	409.575 R	ZMP
GL WI LA CROSSE	LSE	LCU					RADIO	409.575 R	ZMP
GL WI LA CROSSE	LSE 18	LOC	MARK 1B			MAY-1989	RADIO	409.575 R	ZMP
GL WI MANITOWAC	MTW 17	GS	MARK 1F	CAPTURE EFFECT		FEB-1989	LAND LINE	410.250 R	ZAU
GL WI MANITOWAC	MTW	LCU					LAND LINE	410.250 R	ZAU
GL WI MANITOWAC	MTW 17	LOC	MARK 1F			FEB-1989	LAND LINE	410.250 R	ZAU
GL WI MILWAUKEE TIM	MWC	LCU					RADIO	419.025 R	ZAU
GL WI MILWAUKEE TIM	MWC 15L	LOC	MARK 1F			FEB-1989	RADIO	419.025 R	ZAU
GL WI MOSINEE	CWA 08	GS	MARK 1B			MAY-1989	RADIO	409.850 R	ZMP
GL WI MOSINEE	CWA	LCU					RADIO	409.850 R	ZMP
GL WI MOSINEE	CWA 08	LOC	MARK 1B			MAY-1989	RADIO	409.850 R	ZMP
GL WI RACINE	RAC 04	GS	MARK 1E	CAPTURE EFFECT		MAR-1989	RADIO	409.575 R	ZAU
GL WI RACINE	RAC	LCU					RADIO	409.575 R	ZAU
GL WI RACINE	RAC 04	LOC	MARK 1E			MAR-1989	RADIO	409.575 R	ZAU
GL WI RHINELANDER	RHI 09	GS	MARK 1E			MAR-1989	RADIO	409.800 R	ZMP
GL WI RHINELANDER	RHI	LCU					RADIO	409.800 R	ZMP
GL WI RHINELANDER	RHI 09	LOC	MARK 1E			MAR-1989	RADIO	409.800 R	ZMP

GL WI WAUKESHA	SKC	LCU		RADIO	410.025 R ZAU
GL WI WAUKESHA	SKC 10	LOC MARK 1F	FEB-1989	RADIO	410.025 R ZAU

New England Region

Region	State	Location	Loc ID	Runway	Equipment	Model	Note	Avail Date	Comm	Freq	Author Req	MPS
NE	CT	DANBURY	DXP	08	DME	FA-9783			CABLE	409.850	A	ZBW
NE	CT	DANBURY	DXP		LCU				RADIO	409.850	A	ZBW
NE	CT	DANBURY	DXP	08	LOC	MARK 1F		FEB-1989	RADIO	409.850	A	ZBW
NE	CT	HARTFORD	HFD		LCU				RADIO	416.875	A	ZBW
NE	CT	HARTFORD	HFD		LOC	MARK 1F		FEB-1989	RADIO	416.875	A	ZBW
NE	MA	BEVERLY	BVY	16	DME	FA-9783			RADIO	410.300	A	ZBW
NE	MA	BEVERLY	BVY		LCU				RADIO	410.300	A	ZBW
NE	MA	BEVERLY	BVY	16	LOC	MARK 1F		FEB-1989	RADIO	410.300	A	ZBW
NE	MA	LAWRENCE	LWM	05	GS	MARK 1F	CAPTURE EFFECT	FEB-1989	RADIO	408.000	A	ZBW
NE	MA	LAWRENCE	LWM		LCU				RADIO	408.000	A	ZBW
NE	MA	LAWRENCE	LWM	05	LOC	MARK 1A		MAY-1989	RADIO	408.000	A	ZBW
NE	MA	NANTUCKET	ACK	24	DME	FA-9783			CABLE	409.800	?	ZBW
NE	MA	NANTUCKET	ACK	24	GS	MARK 1F		FEB-1989	RADIO	409.800	?	ZBW
NE	MA	NANTUCKET	ACK		LCU				LAND LINE	409.800	?	ZBW
NE	MA	NANTUCKET	ACK	24	LOC	MARK 1F		FEB-1989	LAND LINE	409.800	?	ZBW
NE	MA	NORWOOD	OWD	35	DME	FA-9783			CABLE	409.850	A	ZBW
NE	MA	NORWOOD	OWD		LCU				RADIO	409.850	A	ZBW
NE	MA	NORWOOD	OWD	35	LOC	MARK 1F		FEB-1989	RADIO	409.850	A	ZBW
NE	MA	PITTSFIELD	EIF	26	DME	FA-9783			CABLE	409.825	A	ZBW
NE	MA	PITTSFIELD	EIF		LCU				RADIO	409.825	A	ZBW
NE	MA	PITTSFIELD	EIF	26	LOC	MARK 1E		MAR-1989	RADIO	409.825	A	ZBW
NE	MA	PROVINCETOWN	VQO	07	GS	MARK 1E		MAR-1989	RADIO	410.000	A	ZBW
NE	MA	PROVINCETOWN	VQO	07	DME	FA-9783			CABLE	410.000	A	ZBW
NE	MA	PROVINCETOWN	VQO		LCU				RADIO	410.000	A	ZBW
NE	MA	PROVINCETOWN	VQO	07	LOC	MARK 1E		MAR-1989	RADIO	410.000	A	ZBW
NE	MA	WESTFIELD	BAF	20	GS	MARK 1C	SIDEBAND REF	APR-1989	RADIO	409.175	A	ZBW
NE	MA	WESTFIELD	BAF		LCU				RADIO	409.175	A	ZBW
NE	MA	WESTFIELD	BAF	20	LOC	MARK 1C		APR-1989	RADIO	409.175	A	ZBW
NE	ME	BAR HARBOR	BHB	22	DME	FA-9783			CABLE	410.300	A	ZBW
NE	ME	BAR HARBOR	BHB	22	GS	MARK 1F	CAPTURE EFFECT	FEB-1989	RADIO	410.300	A	ZBW
NE	ME	BAR HARBOR	BHB		LCU				RADIO	410.300	A	ZBW
NE	ME	BAR HARBOR	BHB	22	LOC	MARK 1F		FEB-1989	RADIO	410.300	A	ZBW
NE	ME	LEWISTON	LEW	04	GS	MARK 1E	CAPTURE EFFECT	MAR-1989	RADIO	408.825	A	ZBW
NE	ME	LEWISTON	LEW		LCU				RADIO	408.825	A	ZBW
NE	ME	LEWISTON	LEW	04	LOC	MARK 1A		MAY-1989	RADIO	408.825	A	ZBW
NE	ME	PORTLAND	GCS	29	GS	MARK 1E		MAR-1989	LAND LINE	409.800	?	ZBW
NE	ME	PORTLAND	PWM	11	GS	MARK 1F		FEB-1989	LAND LINE	409.800	?	ZBW
NE	ME	PORTLAND	PWM		LCU				LAND LINE	409.800	?	ZBW
NE	ME	PORTLAND	GCS	29	LOC	MARK 1E		MAR-1989	LAND LINE	409.800	?	ZBW
NE	ME	PORTLAND	PWM	11	LOC	MARK 1F		FEB-1989	LAND LINE	409.800	?	ZBW
NE	ME	PRESQUE ISLE	PQI	01	GS	MARK 1B	CAPTURE EFFECT	MAY-1989	RADIO	408.825	A	ZBW
NE	ME	PRESQUE ISLE	PQI		LCU				RADIO	408.825	A	ZBW
NE	ME	PRESQUE ISLE	PQI	01	LOC	MARK 1B	MARK 1F TX	MAY-1989	RADIO	408.825	A	ZBW

NE ME ROCKLAND	RKD 03	DME FA-9783			CABLE	413.600 A	ZBW
NE ME ROCKLAND	RKD	LCU			RADIO	413.600 A	ZBW
NE ME ROCKLAND	RKD 03	LOC MARK 1A		MAY-1989	RADIO	413.600 A	ZBW
NE NH CONCORD	CON 35	GS MARK 1F		FEB-1989	RADIO	409.550 R	ZBW
NE NH CONCORD	CON	LCU			LAND LINE	409.550 R	ZBW
NE NH CONCORD	CON 35	LOC AIL-55	MARK 1F TX	MAY-1989	LAND LINE	409.550 R	ZBW
NE NH KEENE	EEN 02	GS MARK 1F		FEB-1989	RADIO	413.600 A	ZBW
NE NH KEENE	EEN	LCU			RADIO	413.600 A	ZBW
NE NH KEENE	EEN 02	LOC AIL-55	MARK 1F TX	MAY-1989	RADIO	413.600 A	ZBW
NE NH LACONIA	LCI	LCU			RADIO	416.875 A	ZBW
NE NH LACONIA	LCI 08	LOC AIL-55		MAY-1989	RADIO	416.875 A	ZBW
NE RI PAWTUCKET	SFZ 05	DME FA-9783			CABLE	409.575 A	ZBW
NE RI PAWTUCKET	SFZ	LCU			RADIO	409.575 A	ZBW
NE RI PAWTUCKET	SFZ 05	LOC MARK 1E		MAR-1989	RADIO	409.575 A	ZBW
NE RI WESTERLY	RLS 07	DME FA-9783			CABLE	409.550 A	ZBW
NE RI WESTERLY	RLS	LCU			RADIO	409.550 A	ZBW
NE RI WESTERLY	RLS 07	LOC MARK 1F		FEB-1989	RADIO	409.550 A	ZBW
NE VT RUTLAND	RUT 19	DME FA-9783			CABLE	409.850 A	ZBW
NE VT RUTLAND	RUT	LCU			RADIO	409.850 A	ZBW
NE VT RUTLAND	RUT 19	LOC MARK 1A		MAY-1989	RADIO	409.850 A	ZBW
NE VT SPRINGFIELD	VSF	LCU			RADIO	409.825 R	ZBW
NE VT SPRINGFIELD	VSF 05	LOC MARK 1A		MAY-1989	RADIO	409.825 R	ZBW

Northwest Mountain Region

Region	State	Location	Loc ID	Runway	Equipment	Model	Note	Avail Date	Comm	Freq	Auth or Request	MPS
NM	CO	BRMFIELD-JEFFCO	BJC	29R	GS	MARK 1C		APR-1989	RADIO	408.825	R	ZDV
NM	CO	BRMFIELD-JEFFCO	BJC		LCU				RADIO	408.825	R	ZDV
NM	CO	BRMFIELD-JEFFCO	BJC	29R	LOC	MARK 1C		APR-1989	RADIO	408.825	R	ZDV
NM	CO	DURANGO	DRO	02	GS	MARK 1F	CAPTURE EFFECT	FEB-1989	RADIO	409.800	A	ZDV
NM	CO	DURANGO	DRO		LCU				RADIO	409.800	A	ZDV
NM	CO	DURANGO	DRO	02	LOC	MARK 1F	LPD	FEB-1989	RADIO	409.800	A	ZDV
NM	CO	FORT COLLINS	FNL	33	GS	MARK 1E		MAR-1989	RADIO	409.175	A	ZDV
NM	CO	FORT COLLINS	FNL		LCU				RADIO	409.175	A	ZDV
NM	CO	FORT COLLINS	FNL	33	LOC	MARK 1E		MAR-1989	RADIO	409.175	A	ZDV
NM	CO	GRAND JUNCTION	GJT	11	GS	MARK 1F	CAPTURE EFFECT	FEB-1989	RADIO	409.800	R	ZDV
NM	CO	GRAND JUNCTION	GJT	11	DME	FA-9783			CABLE	409.800	R	ZDV
NM	CO	GRAND JUNCTION	GJT		LCU				RADIO	409.800	R	ZDV
NM	CO	GRAND JUNCTION	GJT	11	LOC	MARK 1F	TWA 8	FEB-1989	RADIO	409.800	R	ZDV
NM	CO	GREELEY	GXY	09	GS	MARK 1F		FEB-1989	RADIO	410.300	A	ZDV
NM	CO	GREELEY	GXY		LCU				RADIO	410.300	A	ZDV
NM	CO	GREELEY	GXY	09	LOC	MARK 1F		FEB-1989	RADIO	410.300	A	ZDV
NM	ID	COEUR D'ALENE	COE	05	GS	MARK 1E	NR	MAR-1989	RADIO	408.825	R	ZSE
NM	ID	COEUR D'ALENE	COE		LCU				RADIO	408.825	R	ZSE
NM	ID	COEUR D'ALENE	COE	05	LOC	MARK 1E	LPD	MAR-1989	RADIO	408.825	R	ZSE
NM	ID	IDAHO FALLS	IDA	20	GS	MARK 1B		MAY-1989	RADIO	409.575	R	ZLC
NM	ID	IDAHO FALLS	IDA	20	DME	FA-9783			CABLE	409.575	R	ZLC
NM	ID	IDAHO FALLS	IDA		LCU				RADIO	409.575	R	ZLC
NM	ID	IDAHO FALLS	IDA	20	LOC	MARK 1B		MAY-1989	RADIO	409.575	R	ZLC
NM	MT	KALISPELL	FCA	01	GS	MARK 1C	NULL REFERENCE	APR-1989	RADIO	410.250	R	ZLC
NM	MT	KALISPELL	FCA	01	DME	FA-9783			CABLE	410.250	R	ZLC
NM	MT	KALISPELL	FCA		LCU				RADIO	410.250	R	ZLC
NM	MT	KALISPELL	FCA	01	LOC	MARK 1C	V RING	APR-1989	RADIO	410.250	R	ZLC
NM	MT	W YELLOWSTONE	LOW	01	GS	MARK 1D	NULL REFERENCE	SEP-1988	RADIO	409.800	A	ZLC
NM	MT	W YELLOWSTONE	LOW		LCU				RADIO	409.800	A	ZLC
NM	MT	W YELLOWSTONE	LOW	01	LOC	MARK 1D	LPD	SEP-1988	RADIO	409.800	A	ZLC
NM	OR	ASTORIA	AST	25	DME	FA-9783			CABLE	409.800	A	ZSE
NM	OR	ASTORIA	AST	25	GS	MARK 1F	CAPTURE EFFECT	FEB-1989	RADIO	409.800	A	ZSE
NM	OR	ASTORIA	AST		LCU				RADIO	409.800	A	ZSE
NM	OR	ASTORIA	AST	25	LOC	MARK 1F	LPD	FEB-1989	RADIO	409.800	A	ZSE
NM	OR	KLAMATH FALLS	LMT	32	GS	MARK 1F		FEB-1989	RADIO	409.575	R	ZSE
NM	OR	KLAMATH FALLS	LMT		LCU				RADIO	409.575	R	ZSE
NM	OR	KLAMATH FALLS	LMT	32	LOC	MARK 1F		FEB-1989	RADIO	409.575	R	ZSE
NM	UT	PROVO	PVU	13	GS	MARK 1E	CAPTURE EFFECT	MAR-1989	RADIO	409.800	A	ZLC
NM	UT	PROVO	PVU		LCU				RADIO	409.800	A	ZLC
NM	UT	PROVO	PVU	13	LOC	MARK 1E	LPD	MAR-1989	RADIO	409.800	A	ZLC
NM	WA	ARLINGTON	AWO		LCU				RADIO	410.300	R	ZSE
NM	WA	ARLINGTON	AWO	34	LOC	MARK 1F	LPD	FEB-1989	RADIO	410.300	R	ZSE

NM WA BELLINGHAM	BLI 16	GS	MARK 1E		MAR-1989	RADIO	416.875	R	ZDV
NM WA BELLINGHAM	BLI	LCU				RADIO	416.875	R	ZDV
NM WA BELLINGHAM	BLI 16	LOC	MARK 1E		MAR-1989	RADIO	416.875	R	ZDV
NM WA BREMERTON	PWT 19	GS	MARK 1F	SBR	FEB-1989	RADIO	419.025	R	ZSE
NM WA BREMERTON	PWT	LCU				RADIO	419.025	R	ZSE
NM WA BREMERTON	PWT 19	LOC	MARK 1F	LPD	FEB-1989	RADIO	419.025	R	ZSE
NM WA HOQUIAM	HQM 24	DME	FA-9783	LPD(14)		CABLE	410.300	R	ZSE
NM WA HOQUIAM	HQM	LCU				RADIO	410.300	R	ZSE
NM WA HOQUIAM	HQM 24	LOC	MARK 1D		SEP-1988	RADIO	410.300	R	ZSE
NM WA OLYMPIA	OLM 17	GS	MARK 1B	NULL REFERENCE	MAY-1989	RADIO	410.250	R	ZSE
NM WA OLYMPIA	OLM	LCU				RADIO	410.250	R	ZSE
NM WA OLYMPIA	OLM 17	LOC	MARK 1B	VERT RING	MAY-1989	RADIO	410.250	R	ZSE
NM WA PORT ANGELES	CLM 08	GS	MARK 1E	SBR	MAR-1989	LAND LINE	411.550	A	ZSE
NM WA PORT ANGELES	CLM	LCU				LAND LINE	411.550	A	ZSE
NM WA PORT ANGELES	CLM 08	LOC	MARK 1E	LPD	MAR-1989	LAND LINE	411.550	A	ZSE
NM WY JACKSON HOLE	JAC 18	GS	MARK 1F	NULL REFERENCE	FEB-1989	RADIO	409.600	R	ZLC
NM WY JACKSON HOLE	JAC	LCU				RADIO	409.600	R	ZLC
NM WY JACKSON HOLE	JAC 18	LOC	MARK 1F	TWA 8	FEB-1989	RADIO	409.600	R	ZLC
NM WY RIVERTON	RIW 28	DME	FA-9783			CABLE	409.800	?	ZLC
NM WY RIVERTON	RIW 28	GS	MARK 1F		FEB-1989	RADIO	409.800	?	ZLC
NM WY RIVERTON	RIW	LCU				RADIO	409.800	?	ZLC
NM WY RIVERTON	RIW 28	LOC	MARK 1F		FEB-1989	RADIO	409.800	?	ZLC
NM WY TWIN FALLS	TWF 25	GS	MARK 1B		MAY-1989	RADIO	409.800	?	ZLC
NM WY TWIN FALLS	TWF	LCU				RADIO	409.800	?	ZLC
NM WY TWIN FALLS	TWF 25	LOC	MARK 1B		MAY-1989	RADIO	409.800	?	ZLC

Southern Region

Region	State	Location	Loc Ident	Runway	Equipment	Model	Note	Avail Date	Comm	Freq	Author Request	MPS
SO	FL	CRAIG FIELD	CRG	31	GS	MARK 1F	NULL REFERENCE	FEB-1989	RADIO	409.800	?	ZJX
SO	FL	CRAIG FIELD	CRG		LCU				RADIO	409.800	?	ZJX
SO	FL	CRAIG FIELD	CRG	31	LOC	MARK 1F		FEB-1989	RADIO	409.800	?	ZJX
SO	FL	DAYTONA BEACH	DAB	06L	GS	MARK 1F	NULL REFERENCE	FEB-1989	LAND LINE	409.800	?	ZJX
SO	FL	DAYTONA BEACH	DAB		LCU				LAND LINE	409.800	?	ZJX
SO	FL	DAYTONA BEACH	DAB	06L	LOC	MARK 1F		FEB-1989	LAND LINE	409.800	?	ZJX
SO	FL	FT LAUDRDALE EX	FXE	08	GS	MARK 1E	NULL REFERENCE	MAR-1989	RADIO	409.800	A	ZMA
SO	FL	FT LAUDRDALE EX	FXE		LCU				RADIO	409.800	A	ZMA
SO	FL	FT LAUDRDALE EX	FXE	08	LOC	MARK 1D		SEP-1988	RADIO	409.800	A	ZMA
SO	FL	FT MYERS (PAGE)	FMY	05	GS	MARK 1F	NULL REFERENCE	FEB-1989	RADIO	409.600	A	ZMA
SO	FL	FT MYERS (PAGE)	FMY		LCU				RADIO	409.600	A	ZMA
SO	FL	FT MYERS (PAGE)	FMY	05	LOC	MARK 1F		FEB-1989	RADIO	409.600	A	ZMA
SO	FL	GAINESVILLE	GNV	28	GS	MARK 1E	NULL REFERENCE	MAR-1989	RADIO	409.575	A	ZJX
SO	FL	GAINESVILLE	GNV		LCU				RADIO	409.575	A	ZJX
SO	FL	GAINESVILLE	GNV	28	LOC	MARK 1E		MAR-1989	RADIO	409.575	A	ZJX
SO	FL	LAKELAND	LAL	05	GS	MARK 1E	NULL REFERENCE	MAR-1989	RADIO	410.250	A	ZMA
SO	FL	LAKELAND	LAL		LCU				RADIO	410.250	A	ZMA
SO	FL	LAKELAND	LAL	05	LOC	MARK 1E		MAR-1989	RADIO	410.250	A	ZMA
SO	FL	MIAMI (DADE CO)	TNT	09	GS	MARK 1F		FEB-1989	RADIO	410.300	A	ZMA
SO	FL	MIAMI (DADE CO)	TNT		LCU				RADIO	410.300	A	ZMA
SO	FL	MIAMI (DADE CO)	TNT	09	LOC	MARK 1F		FEB-1989	RADIO	410.300	A	ZMA
SO	FL	OCALA	OCF		LCU				LAND LINE	409.800	A	ZMA
SO	FL	OCALA	OCF	36	LOC	MARK 1C		APR-1989	LAND LINE	409.800	A	ZMA
SO	FL	OPA LOCKA	OPF	09L	GS	MARK 1E		MAR-1989	RADIO	410.250	A	ZMA
SO	FL	OPA LOCKA	OPF		LCU				RADIO	410.250	A	ZMA
SO	FL	OPA LOCKA	OPF	09L	LOC	MARK 1D		SEP-1988	RADIO	410.250	A	ZMA
SO	FL	PENSACOLA	PNS	16	DME	FA-9783			CABLE	409.800	?	ZJX
SO	FL	PENSACOLA	PNS	16	GS	MARK 1F		FEB-1989	LAND LINE	409.800	?	ZJX
SO	FL	PENSACOLA	PNS		LCU				LAND LINE	409.800	?	ZJX
SO	FL	PENSACOLA	PNS	16	LOC	MARK 1F		FEB-1989	LAND LINE	409.800	?	ZJX
SO	FL	SANFORD	SND	09	GS	MARK 1E	NULL REFERENCE	MAR-1989	RADIO	409.850	A	ZMA
SO	FL	SANFORD	SND		LCU				RADIO	409.850	A	ZMA
SO	FL	SANFORD	SND	09	LOC	MARK 1E		MAR-1989	RADIO	409.850	A	ZMA
SO	FL	TALLAHASSEE	PLQ	27L	GS	MARK 1F	CAP. EFFECT DUAL	FEB-1989	LAND LINE	409.600	A	ZJX
SO	FL	TALLAHASSEE	TLH	36	GS	MARK 1F		FEB-1989	LAND LINE	409.600	A	ZJX
SO	FL	TALLAHASSEE	TLH		LCU				LAND LINE	409.600	A	ZJX
SO	FL	TALLAHASSEE	TLH	36	LOC	MARK 1F		FEB-1989	LAND LINE	409.600	A	ZJX
SO	FL	TALLAHASSEE	PLQ	27L	LOC	MARK 1F	DUAL XMTR & MNTR	FEB-1989	LAND LINE	409.600	A	ZJX
SO	FL	TAMIAMI	TMB	09R	GS	MARK 1E		MAR-1989	RADIO	409.575	A	ZMA
SO	FL	TAMIAMI	TMB		LCU				RADIO	409.575	A	ZMA
SO	FL	TAMIAMI	TMB	09R	LOC	MARK 1E		MAR-1989	RADIO	409.575	A	ZMA
SO	FL	TITUSVILLE	TIX	36	GS	MARK 1D		SEP-1988	RADIO	410.300	A	ZMA
SO	FL	TITUSVILLE	TIX		LCU				RADIO	410.300	A	ZMA
SO	FL	TITUSVILLE	TIX	36	LOC	MARK 1D		SEP-1988	RADIO	410.300	A	ZMA

SO FL W PALM BEACH	PBI	09L	GS	MARK 1F		FEB-1989	LAND LINE	409.800	?	ZMA
SO FL W PALM BEACH	PBI		LCU				LAND LINE	409.800	?	ZMA
SO FL W PALM BEACH	PBI	09L	LOC	MARK 1F		FEB-1989	LAND LINE	409.800	?	ZMA
SO GA BRUNSWICK	BQK	07	GS	MARK 1D		SEP-1988	RADIO	409.575	A	ZJX
SO GA BRUNSWICK	BQK		LCU				RADIO	409.575	A	ZJX
SO GA BRUNSWICK	BQK	07	LOC	MARK 1D		SEP-1988	RADIO	409.575	A	ZJX
SO GA COLUMBUS	CSG	05	GS	MARK 1F	CAPTURE EFFECT	FEB-1989	LAND LINE	409.175	A	ZTL
SO GA COLUMBUS	CSG		LCU				LAND LINE	409.175	A	ZTL
SO GA COLUMBUS	CSG	05	LOC	MARK 1F		FEB-1989	LAND LINE	409.175	A	ZTL
SO GA FULTON COUNTY	FTY	08R	GS	MARK 1B	CAPTURE EFFECT	MAY-1989	RADIO	416.875	A	ZTL
SO GA FULTON COUNTY	FTY		LCU				RADIO	416.875	A	ZTL
SO GA FULTON COUNTY	FTY	08R	LOC	MARK 1B		MAY-1989	RADIO	416.875	A	ZTL
SO GA LAGRANGE	GNK	31	GS	MARK 1F		FEB-1989	RADIO	410.250	A	ZTL
SO GA LAGRANGE	GNK		LCU				RADIO	410.250	A	ZTL
SO GA LAGRANGE	GNK	31	LOC	MARK 1F		FEB-1989	RADIO	410.250	A	ZTL
SO GA MARIETTA	RYY		LCU				RADIO	408.025	A	ZTL
SO GA MARIETTA	RYY	27	LOC	MARK 1F		FEB-1989	RADIO	408.025	A	ZTL
SO GA WAYCROSS	AYS		LCU				RADIO	409.825	A	ZJX
SO GA WAYCROSS	AYS	18	LOC	MARK 1F		FEB-1989	RADIO	409.825	A	ZJX
SO MS COLUMBUS	GTR	18	GS	MARK 1C	CAPTURE EFFECT	APR-1989	RADIO	409.800	A	ZME
SO MS COLUMBUS	GTR		LCU				RADIO	409.800	A	ZME
SO MS COLUMBUS	GTR	18	LOC	MARK 1A		MAY-1989	RADIO	409.800	A	ZME
SO MS HATTIESBURG	PIB	18	GS	MARK 1C		APR-1989	RADIO	409.800	?	ZHU
SO MS HATTIESBURG	PIB		LCU				RADIO	409.800	?	ZHU
SO MS HATTIESBURG	PIB	18	LOC	MARK 1C		APR-1989	RADIO	409.800	?	ZHU
SO MS JACKSON (HAWK)	JHF	16	GS	MARK 1F		FEB-1989	RADIO	409.825	A	ZME
SO MS JACKSON (HAWK)	JHF		LCU				RADIO	409.825	A	ZME
SO MS JACKSON (HAWK)	JHF	16	LOC	MARK 1E		MAR-1989	RADIO	409.825	A	ZME
SO MS MCCOMB	MCB		LCU				RADIO	409.850	A	ZHU
SO MS MCCOMB	MCB	15	LOC	MARK 1A		MAY-1989	RADIO	409.850	A	ZHU
SO MS NATCHEZ	HEZ		LCU				RADIO	409.600	A	ZHU
SO MS NATCHEZ	HEZ	17	LOC	MARK 1D		SEP-1988	RADIO	409.600	A	ZHU
SO MS OXFORD	UVD		LCU				RADIO	409.825	A	ZME
SO MS OXFORD	UVD	09	LOC	MARK 1F		FEB-1989	RADIO	409.825	A	ZME
SO MS TUPELO	TUP	18	GS	MARK 1F		FEB-1989	RADIO	409.575	A	ZME
SO MS TUPELO	TUP		LCU				RADIO	409.575	A	ZME
SO MS TUPELO	TUP	18	LOC	MARK 1F		FEB-1989	RADIO	409.575	A	ZME
SO NC FAYETTEVILLE	GRA	04	GS	MARK 1F	CAPTURE EFFECT	FEB-1989	LAND LINE	409.825	A	ZDC
SO NC FAYETTEVILLE	GRA		LCU				LAND LINE	409.825	A	ZDC
SO NC FAYETTEVILLE	GRA	04	LOC	MARK 1F		FEB-1989	LAND LINE	409.825	A	ZDC
SO NC HICKORY	HKY	24	GS	MARK 1D		SEP-1988	RADIO	409.850	A	ZTL
SO NC HICKORY	HKY		LCU				RADIO	409.850	A	ZTL
SO NC HICKORY	HKY	24	LOC	MARK 1D		SEP-1988	RADIO	409.850	A	ZTL
SO NC JACKSONVILLE	OAJ	05	DME	FA-9783			CABLE	409.850	A	ZDC
SO NC JACKSONVILLE	OAJ	05	GS	MARK 1D		SEP-1988	RADIO	409.850	A	ZDC
SO NC JACKSONVILLE	OAJ		LCU				RADIO	409.850	A	ZDC
SO NC JACKSONVILLE	OAJ	05	LOC	MARK 1D		SEP-1988	RADIO	409.850	A	ZDC
SO NC KINSTON	ISO	04	GS	MARK 1C		APR-1989	RADIO	409.175	A	ZDC
SO NC KINSTON	ISO		LCU				RADIO	409.175	A	ZDC
SO NC KINSTON	ISO	04	LOC	MARK 1C		APR-1989	RADIO	409.175	A	ZDC
SO NC NEW BERN	EWN		LCU				RADIO	409.800	A	ZDC
SO NC NEW BERN	EWN	04	LOC	MARK 1E		MAR-1989	RADIO	409.800	A	ZDC
SO NC ROCKY MOUNT	RWI	04	GS	AIL-55		MAY-1989	LAND LINE	409.575	A	ZDC
SO NC ROCKY MOUNT	RWI		LCU				LAND LINE	409.575	A	ZDC
SO NC ROCKY MOUNT	RWI	04	LOC	AIL-55		MAY-1989	LAND LINE	409.575	A	ZDC

SO	NC	SOUTHERN PINES	SOP		LCU				RADIO	409.800	A ZDC
SO	NC	SOUTHERN PINES	SOP	05	LOC	MARK 1E		MAR-1989	RADIO	409.800	A ZDC
SO	NC	WILMINGTON	ILM	34	GS	MARK 1F	SIDEBAND REF	FEB-1989	LAND LINE	409.600	A ZDC
SO	NC	WILMINGTON	ILM		LCU				LAND LINE	409.600	A ZDC
SO	NC	WILMINGTON	ILM	34	LOC	MARK 1F		FEB-1989	LAND LINE	409.600	A ZDC
SO	PR	SAN JUAN	CLA	10	GS	MARK 1F		FEB-1989	RADIO	409.800	A ZSU
SO	PR	SAN JUAN	SJU	08	GS	MARK 1F		FEB-1989	RADIO	409.800	A ZSU
SO	PR	SAN JUAN	SJU		LCU				RADIO	409.800	A ZSU
SO	PR	SAN JUAN	SJU	08	LOC	MARK 1F		FEB-1989	RADIO	409.800	A ZSU
SO	PR	SAN JUAN	CLA	10	LOC	MARK 1F		FEB-1989	RADIO	409.800	A ZSU
SO	SC	GREENVILLE	GMU	36	GS	MARK 1F	CAPTURE EFFECT	FEB-1989	LAND LINE	409.600	A ZTL
SO	SC	GREENVILLE	GMU		LCU				LAND LINE	409.600	A ZTL
SO	SC	GREENVILLE	GMU	36	LOC	MARK 1F		FEB-1989	LAND LINE	409.600	A ZTL
SO	SC	N MYRTLE BCH	CRE	23	GS	MARK 1C		APR-1989	RADIO	409.175	A ZJX
SO	SC	N MYRTLE BCH	CRE		LCU				RADIO	409.175	A ZJX
SO	SC	N MYRTLE BCH	CRE	23	LOC	MARK 1C		APR-1989	RADIO	409.175	A ZJX
SO	SC	SPARTANBURG	SPA		LCU				RADIO	410.250	A ZTL
SO	SC	SPARTANBURG	SPA	04	LOC	MARK 1D		SEP-1988	RADIO	410.250	A ZTL
SO	TN	CLARKSVILLE	CKV		LCU				RADIO	409.175	A MEM
SO	TN	CLARKSVILLE	CKV	34	LOC	MARK 1E		MAR-1989	RADIO	409.175	A MEM
SO	TN	CROSSVILLE	CSV	25	GS	MARK 1C		APR-1989	RADIO	409.850	A ZTL
SO	TN	CROSSVILLE	CSV		LCU				RADIO	409.850	A ZTL
SO	TN	CROSSVILLE	CSV	25	LOC	MARK 1C		APR-1989	RADIO	409.850	A ZTL
SO	TN	SMYRNA	MQY	32	GS	MARK 1E		MAR-1989	RADIO	409.825	A MEM
SO	TN	SMYRNA	MQY		LCU				RADIO	409.825	A MEM
SO	TN	SMYRNA	MQY	32	LOC	MARK 1E		MAR-1989	RADIO	409.825	A MEM
SO	VI	ST.CROIX/CHRIST	STX	09	GS	MARK 1B		MAY-1989	RADIO	409.600	A ZSU
SO	VI	ST.CROIX/CHRIST	STX		LCU				RADIO	409.600	A ZSU
SO	VI	ST.CROIX/CHRIST	STX	09	LOC	MARK 1B		MAY-1989	RADIO	409.600	A ZSU
SO	VI	ST.THOMAS/CHARL	TMN	10	GS	MARK 1D		SEP-1988	RADIO	409.575	A ZSU
SO	VI	ST.THOMAS/CHARL	TMN		LCU				RADIO	409.575	A ZSU
SO	VI	ST.THOMAS/CHARL	TMN	10	LOC	MARK 1D		SEP-1988	RADIO	409.575	A ZSU

Southwest Region

Region	State	Location	Loc ID	Runway	Equipment	Model	Note	Avail Date	Comm	Freq	Author Request	MPS
SW	AR	EL DORADO	ELD	22	DME	FA-9783			CABLE	409.600	R	ZFW
SW	AR	EL DORADO	ELD		LCU				RADIO	409.600	R	ZFW
SW	AR	EL DORADO	ELD	22	LOC	MARK 1F		FEB-1989	RADIO	409.600	R	ZFW
SW	AR	HOT SPRINGS	HOT	05	GS	MARK 1A		MAY-1989	RADIO	409.575	R	ZFW
SW	AR	HOT SPRINGS	HOT		LCU				RADIO	409.575	R	ZFW
SW	AR	HOT SPRINGS	HOT	05	LOC	MARK 1A		MAY-1989	RADIO	409.575	R	ZFW
SW	AR	PINE BLUFF	PBF	17	GS	MARK 1E		MAR-1989	RADIO	409.825	R	ZFW
SW	AR	PINE BLUFF	PBF		LCU				RADIO	409.825	R	ZFW
SW	AR	PINE BLUFF	PBF	17	LOC	MARK 1D		SEP-1988	RADIO	409.825	R	ZFW
SW	LA	ALEX./ESLER FLD	ESF	26	GS	AIL-55		MAY-1989	RADIO	409.825	R	ZHU
SW	LA	ALEX./ESLER FLD	ESF		LCU				RADIO	409.825	R	ZHU
SW	LA	ALEX./ESLER FLD	ESF	26	LOC	AIL-55		MAY-1989	RADIO	409.825	R	ZHU
SW	LA	LAKE CHARLES	LCH	15	GS	MARK 1F		FEB-1989	RADIO	409.800	R	ZHU
SW	LA	LAKE CHARLES	LCH	15	DME	FA-9783			CABLE	409.800	R	ZHU
SW	LA	LAKE CHARLES	LCH		LCU				RADIO	409.800	R	ZHU
SW	LA	LAKE CHARLES	LCH	15	LOC	MARK 1F		FEB-1989	RADIO	409.800	R	ZHU
SW	NM	CLOVIS	CVN		LCU				RADIO	409.575	R	ZAB
SW	NM	CLOVIS	CVN	03	LOC	MARK 1F		FEB-1989	RADIO	409.575	R	ZAB
SW	NM	DOUBLE EAGLE II	AEG	22	GS	MARK 1F		FEB-1989	RADIO	409.800	?	ZAB
SW	NM	DOUBLE EAGLE II	AEG		LCU				RADIO	409.800	?	ZAB
SW	NM	DOUBLE EAGLE II	AEG	22	LOC	MARK 1F		FEB-1989	RADIO	409.800	?	ZAB
SW	NM	FARMINGTON	FMN	25	GS	MARK 1F		FEB-1989	RADIO	409.575	R	ZAB
SW	NM	FARMINGTON	FMN	25	DME	FA-9783			CABLE	409.575	R	ZAB
SW	NM	FARMINGTON	FMN		LCU				RADIO	409.575	R	ZAB
SW	NM	FARMINGTON	FMN	25	LOC	MARK 1F		FEB-1989	RADIO	409.575	R	ZAB
SW	NM	SILVER CITY	SVC		LCU				RADIO	409.800	R	ZAB
SW	NM	SILVER CITY	SVC	26	LOC	MARK 1E		MAR-1989	RADIO	409.800	R	ZAB
SW	OK	ACADEMY			DME	FA-9783			CABLE	409.800	?	
SW	OK	ACADEMY			GS	MARK 1F	CAPTURE EFFECT	FEB-1989	LAND LINE	409.800	?	
SW	OK	ACADEMY			GS	MARK 1F	CAPTURE EFFECT	FEB-1989	LAND LINE	409.800	?	
SW	OK	ACADEMY			GS	MARK 1F		FEB-1989	LAND LINE	409.800	?	
SW	OK	ACADEMY			LCU				LAND LINE	409.800	?	
SW	OK	ACADEMY			LCU				LAND LINE	409.800	?	
SW	OK	ACADEMY			LCU				LAND LINE	409.800	?	
SW	OK	ACADEMY			LOC	MARK 1F		FEB-1989	LAND LINE	409.800	?	
SW	OK	ACADEMY			LOC	MARK 1F		FEB-1989	LAND LINE	409.800	?	
SW	OK	ACADEMY			LOC	MARK 1F		FEB-1989	LAND LINE	409.800	?	
SW	OK	BARTLESVILLE	BVO		LCU				RADIO	409.175	R	ZFW
SW	OK	BARTLESVILLE	BVO	17	LOC	MARK 1D		SEP-1988	RADIO	409.175	R	ZFW
SW	OK	NORMAN	PHY	03	DME	FA-9783			CABLE	409.800	R	ZFW
SW	OK	NORMAN	PHY		LCU				RADIO	409.800	R	ZFW
SW	OK	NORMAN	PHY	03	LOC	MARK 1F		FEB-1989	RADIO	409.800	R	ZFW
SW	OK	OKMULGEE	OKM	17	GS	MARK 1E		MAR-1989	RADIO	409.825	R	ZFW
SW	OK	OKMULGEE	OKM		LCU				RADIO	409.825	R	ZFW
SW	OK	OKMULGEE	OKM	17	LOC	MARK 1E		MAR-1989	RADIO	409.825	R	ZFW

SW TX ABILENE	ABI	35R	GS	MARK 1F	FEB-1989	RADIO	409.575 R	ZHU
SW TX ABILENE	ABI	35R	DME	FA-9783		CABLE	409.575 R	ZHU
SW TX ABILENE	ABI		LCU			RADIO	409.575 R	ZHU
SW TX ABILENE	ABI	35R	LOC	MARK 1F	FEB-1989	RADIO	409.575 R	ZHU
SW TX ALICE	ALI	31	DME	FA-9783		CABLE	409.800 R	ZHU
SW TX ALICE	ALI		LCU			RADIO	409.800 R	ZHU
SW TX ALICE	ALI	31	LOC	MARK 1E	MAR-1989	RADIO	409.800 R	ZHU
SW TX ANGLTN/BRAZORIA	LBX	17	GS	MARK 1E	MAR-1989	RADIO	409.800 R	ZHU
SW TX ANGLTN/BRAZORIA	LBX		LCU			RADIO	409.800 R	ZHU
SW TX ANGLTN/BRAZORIA	LBX	17	LOC	MARK 1E	MAR-1989	RADIO	409.800 R	ZHU
SW TX BEAUMONT	BPT	12	GS	MARK 1F	FEB-1989	RADIO	409.575 R	ZHU
SW TX BEAUMONT	BPD	12	DME	FA-9783		CABLE	409.575 R	ZHU
SW TX BEAUMONT	BPT		LCU			RADIO	409.575 R	ZHU
SW TX BEAUMONT	BPT	12	LOC	MARK 1F	FEB-1989	RADIO	409.575 R	ZHU
SW TX BROWNWOOD	BWD		LCU			RADIO	409.800 R	ZFW
SW TX BROWNWOOD	BWD	17	LOC	MARK 1D	SEP-1988	RADIO	409.800 R	ZFW
SW TX COLLEGE STATION	CLL	34	GS	MARK 1F	FEB-1989	RADIO	409.800 R	ZHU
SW TX COLLEGE STATION	CLL		LCU			RADIO	409.800 R	ZHU
SW TX COLLEGE STATION	CLL	34	LOC	MARK 1B	MAY-1989	RADIO	409.800 R	ZHU
SW TX DEL RIO	DRT	13	DME	FA-9783		CABLE	409.800 R	ZHU
SW TX DEL RIO	DRT		LCU			RADIO	409.800 R	ZHU
SW TX DEL RIO	DRT	13	LOC	MARK 1E	MAR-1989	RADIO	409.800 R	ZHU
SW TX DENTON	DTO	17	GS	MARK 1E	MAR-1989	RADIO	408.825 R	ZFW
SW TX DENTON	DTO		LCU			RADIO	408.825 R	ZFW
SW TX DENTON	DTO	17	LOC	MARK 1E	MAR-1989	RADIO	408.825 R	ZFW
SW TX KERRVILLE	ERV		LCU			RADIO	409.800 ?	ZHU
SW TX KERRVILLE	ERV	30	LOC	MARK 1D	SEP-1988	RADIO	409.800 ?	ZHU
SW TX KILLEEN	ILE	01	GS	MARK IF		RADIO	408.825 R	ZHU
SW TX KILLEEN	ILE		LCU			RADIO	408.825 R	ZHU
SW TX KILLEEN	ILE	01	LOC	MARK 1E	MAR-1989	RADIO	408.825 R	ZHU
SW TX SAN ANGELO	SJT	03	GS	MARK 1F	FEB-1989	RADIO	409.600 R	ZFW
SW TX SAN ANGELO	SJT	03	DME	FA-9783		CABLE	409.600 R	ZFW
SW TX SAN ANGELO	SJT		LCU			RADIO	409.600 R	ZFW
SW TX SAN ANGELO	SJT	03	LOC	MARK 1F	FEB-1989	RADIO	409.600 R	ZFW
SW TX SAN MARCOS	RUM	12	GS	MARK 1E	MAR-1989	RADIO	409.175 R	ZHU
SW TX SAN MARCOS	RUM		LCU			RADIO	409.175 R	ZHU
SW TX SAN MARCOS	RUM	12	LOC	MARK 1E	MAR-1989	RADIO	409.175 R	ZHU
SW TX TEMPLE	TPL	15	DME	FA-9783		CABLE	410.250 R	ZHU
SW TX TEMPLE	TPL	15	GS	MARK 1B	MAY-1989	RADIO	410.250 R	ZHU
SW TX TEMPLE	TPL		LCU			RADIO	410.250 R	ZHU
SW TX TEMPLE	TPL	15	LOC	MARK 1B	MAY-1989	RADIO	410.250 R	ZHU
SW TX WACO-MADISON	ACT	19	DME	FA-9783		CABLE	409.600 R	ZFW
SW TX WACO-MADISON	ACT	19	GS	MARK 1F	FEB-1989	RADIO	409.600 R	ZFW
SW TX WACO-MADISON	ACT		LCU			RADIO	409.600 R	ZFW
SW TX WACO-MADISON	ACT	19	LOC	MARK 1F	FEB-1989	RADIO	409.600 R	ZFW
SW TX WACO-TST1	CNW	17	GS	MARK 1A	MAY-1989	RADIO	410.300 R	ZFW
SW TX WACO-TST1	CNW		LCU			RADIO	410.300 R	ZFW
SW TX WACO-TST1	CNW	17	LOC	MARK 1A	MAY-1989	RADIO	410.300 R	ZFW

Western Pacific Region

Region	State	Location	Loc ID	Runway	Equipment	Model	Note	Avail Date	Comm	Freq	Author Request	MPS
WP	AZ	CASA GRANDE	CGZ	05	GS	MARK 1E	NULL REFERENCE	MAR-1989	RADIO	409.600	R	ZAB
WP	AZ	CASA GRANDE	CGZ		LCU				RADIO	409.600	R	ZAB
WP	AZ	CASA GRANDE	CGZ	05	LOC	MARK 1E	8 ELEMENT	MAR-1989	RADIO	409.600	R	ZAB
WP	AZ	GRAND CANYON	GCN	03	GS	MARK 1E	CAPTURE EFFECT	MAR-1989	RADIO	409.800	R	ZLA
WP	AZ	GRAND CANYON	GCN		LCU				RADIO	409.800	R	ZLA
WP	AZ	GRAND CANYON	GCN	03	LOC	MARK 1E		MAR-1989	RADIO	409.800	R	ZLA
WP	AZ	RYAN FIELD	IVI	06	GS	MARK 1E	NULL REFERENCE	MAR-1989	RADIO	409.575	R	ZAB
WP	AZ	RYAN FIELD	IVI		LCU				RADIO	409.575	R	ZAB
WP	AZ	RYAN FIELD	IVI	06	LOC	MARK 1E		MAR-1989	RADIO	409.575	R	ZAB
WP	AZ	TUCSON	TUS	11L	GS	MARK 1B	NULL REFERENCE	MAY-1989	RADIO	409.825	A	ZAB
WP	AZ	TUCSON	TUS		LCU				RADIO	409.825	A	ZAB
WP	AZ	TUCSON	TUS	11L	LOC	MARK 1B	/MARK 1F	MAY-1989	RADIO	409.825	A	ZAB
WP	AZ	YUMA	YUM	21R	GS	MARK 1C	NULL REFERENCE	APR-1989	RADIO	409.175	R	ZLA
WP	AZ	YUMA	YUM		LCU				RADIO	409.175	R	ZLA
WP	AZ	YUMA	YUM	21R	LOC	MARK 1C		APR-1989	RADIO	409.175	R	ZLA
WP	CA	BAKERSFIELD	BFL	30R	GS	MARK 1F	NULL REFERENCE	FEB-1989	RADIO	409.850	R	ZLA
WP	CA	BAKERSFIELD	BFL		LCU				RADIO	409.850	R	ZLA
WP	CA	BAKERSFIELD	BFL	30R	LOC	MARK 1F		FEB-1989	RADIO	409.850	R	ZLA
WP	CA	CHICO	CIC	13	GS	MARK 1D	NULL REFERNCE	SEP-1988	RADIO	409.825	A	ZOA
WP	CA	CHICO	CIC		LCU				RADIO	409.825	A	ZOA
WP	CA	CHICO	CIC	13	LOC	MARK 1D	V-RING	SEP-1988	RADIO	409.825	A	ZOA
WP	CA	CRESCENT CITY	CEC	11	GS	MARK 1C	NULL REFERNCE	APR-1989	RADIO	409.600	A	ZSE
WP	CA	CRESCENT CITY	CEC		LCU				RADIO	409.600	A	ZSE
WP	CA	CRESCENT CITY	CEC	11	LOC	MARK 1C	15 ELEMENT V-RING	APR-1989	RADIO	409.600	A	ZSE
WP	CA	FULLERTON	FUL		LCU				RADIO	409.600	A	ZLA
WP	CA	FULLERTON	FUL	24	LOC	MARK 1E	14 ELEMENT	MAR-1989	RADIO	409.600	A	ZLA
WP	CA	HAWTHORNE	HHR		LCU				RADIO	416.875	A	ZLA
WP	CA	HAWTHORNE	HHR	25	LOC	MARK 1D	14 ELEMENT	SEP-1988	RADIO	416.875	A	ZLA
WP	CA	HAYWARD	HWD		LCU				RADIO	409.800	R	ZOA
WP	CA	HAYWARD	HWD	28L	LOC	MARK 1E	8 ELEMENT LPD	MAR-1989	RADIO	409.800	R	ZOA
WP	CA	LIVERMORE	LVK	25R	GS	MARK 1E	NULL REFERENCE	MAR-1989	RADIO	410.250	A	ZOA
WP	CA	LIVERMORE	LVK		LCU				RADIO	410.250	A	ZOA
WP	CA	LIVERMORE	LVK	25R	LOC	MARK 1E	8 ELEMENT LPD	MAR-1989	RADIO	410.250	A	ZOA
WP	CA	LONG BEACH	LGB	30	GS	MARK 1F	SIDEBAND REF.	FEB-1989	RADIO	417.650	A	ZLA
WP	CA	LONG BEACH	LGB		LCU				RADIO	417.650	A	ZLA
WP	CA	LONG BEACH	LGB	30	LOC	MARK 1F	8 ELEMENT LPD	FEB-1989	RADIO	417.650	A	ZLA
WP	CA	MONTEREY	MRY	10	GS	MARK 1F	SIDEBAND REF.	FEB-1989	LAND LINE	409.800	?	ZOA
WP	CA	MONTEREY	MTB	28	DME	FA-9783			CABLE	409.800	?	ZOA
WP	CA	MONTEREY	MRY		LCU				LAND LINE	409.800	?	ZOA
WP	CA	MONTEREY	MRY	10	LOC	MARK 1F	15 ELEMENT V-RING	FEB-1989	LAND LINE	409.800	?	ZOA
WP	CA	MONTEREY	MTB	28	LOC	MARK 1B	/MARK 1F	MAY-1989	LAND LINE	409.800	?	ZOA
WP	CA	NAPA	APC		LCU				RADIO	409.575	A	ZOA
WP	CA	NAPA	APC	36	LOC	MARK 1E		MAR-1989	RADIO	409.575	A	ZOA

WP	CA	PALMDALE	PMD	25	GS	MARK 1A	NULL REFERENCE	MAY-1989	LAND LINE	409.175 A ZLA
WP	CA	PALMDALE	PMD		LCU				LAND LINE	409.175 A ZLA
WP	CA	PALMDALE	PMD	25	LOC	MARK 1A	MK12/14 EL TRV WV	MAY-1989	LAND LINE	409.175 A ZLA
WP	CA	PT MUGU	RRG	21	GS	MARK 1E	NULL REFERENCE	MAR-1989	RADIO	408.825 A ZLA
WP	CA	PT MUGU	RRG		LCU				RADIO	408.825 A ZLA
WP	CA	PT MUGU	RRG	21	LOC	MARK 1E		MAR-1989	RADIO	408.825 A ZLA
WP	CA	REDDING	RDD	34	GS	MARK 1B	NULL REFERENCE	MAY-1989	RADIO	409.575 A ZOA
WP	CA	REDDING	RDD		LCU				RADIO	409.575 A ZOA
WP	CA	REDDING	RDD	34	LOC	MARK 1B	/1F	MAY-1989	RADIO	409.575 A ZOA
WP	CA	SALINAS	SNS	31	GS	MARK 1C		APR-1989	RADIO	409.600 A ZOA
WP	CA	SALINAS	SNS		LCU				RADIO	409.600 A ZOA
WP	CA	SALINAS	SNS	31	LOC	MARK 1C	V-RING	APR-1989	RADIO	409.600 A ZOA
WP	CA	SAN LUIS OBISPO	SBP		LCU				RADIO	409.175 A ZLA
WP	CA	SAN LUIS OBISPO	SBP	11	LOC	MARK 1E		MAR-1989	RADIO	409.175 A ZLA
WP	CA	SANTA ANA	SNA	19R	GS	AIL-55	SIDEBAND REF./1F	MAY-1989	RADIO	419.650 A ZLA
WP	CA	SANTA ANA	SNA		LCU				RADIO	419.650 A ZLA
WP	CA	SANTA ANA	SNA	19R	LOC	AIL-55	/1F	MAY-1989	RADIO	419.650 A ZLA
WP	CA	SANTA ROSA	STS	32	GS	MARK 1C	NULL REFERENCE	APR-1989	RADIO	409.850 A ZOA
WP	CA	SANTA ROSA	STS		LCU				RADIO	409.850 A ZOA
WP	CA	SANTA ROSA	STS	32	LOC	MARK 1C		APR-1989	RADIO	409.850 A ZOA
WP	CA	STOCKTON	SCK	29R	GS	MARK 1F	NULL REFERENCE	FEB-1989	LAND LINE	409.175 A ZOA
WP	CA	STOCKTON	SCK		LCU				LAND LINE	409.175 A ZOA
WP	CA	STOCKTON	SCK	29R	LOC	MARK 1F	8 ELEMENT	FEB-1989	LAND LINE	409.175 A ZOA
WP	CA	UKIAH	UKI	15	DME	FA-9783			CABLE	409.800 R ZOA
WP	CA	UKIAH	UKI		LCU				RADIO	409.800 R ZOA
WP	CA	UKIAH	UKI	15	LOC	MARK 1E		MAR-1989	RADIO	409.800 R ZOA
WP	CA	VISALIA	VIS	30	GS	MARK 1F	NULL REFERENCE	FEB-1989	RADIO	409.825 A ZOA
WP	CA	VISALIA	VIS		LCU				RADIO	409.825 A ZOA
WP	CA	VISALIA	VIS	30	LOC	MARK 1F		FEB-1989	RADIO	409.825 A ZOA
WP	CP	SAIPAN OBYAN	GSN	07	GS	MARK 1F	NULL REFERENCE	FEB-1989	RADIO	409.800 R ZHN
WP	CP	SAIPAN OBYAN	GSN	07	DME	FA-9783			CABLE	409.800 R ZHN
WP	CP	SAIPAN OBYAN	GSN		LCU				RADIO	409.800 R ZHN
WP	CP	SAIPAN OBYAN	GSN	07	LOC	MARK 1F		FEB-1989	RADIO	409.800 R ZHN
WP	GU	GUAM AGANA	GUM	06L	GS	MARK 1C	CAPTURE EFFECT	APR-1989	RADIO	409.800 R ZHN
WP	GU	GUAM AGANA	GUM		LCU				RADIO	409.800 R ZHN
WP	GU	GUAM AGANA	GUM	06L	LOC	MARK 1C		APR-1989	RADIO	409.800 R ZHN
WP	HI	MAUI KAHULUI	OGG	02	GS	MARK 1F	CAPTURE EFFECT	FEB-1989	RADIO	409.575 A ZHN
WP	HI	MAUI KAHULUI	OGG		LCU				RADIO	409.575 A ZHN
WP	HI	MAUI KAHULUI	OGG	02	LOC	MARK 1F		FEB-1989	RADIO	409.575 A ZHN
WP	HI	OAHU HONOLULU	IUM	04R	GS	MARK 1C	NULL REFERENCE	APR-1989	LAND LINE	409.550 A ZHN
WP	HI	OAHU HONOLULU	HNL	08L	GS	MARK 1F		FEB-1989	RADIO	409.550 A ZHN
WP	HI	OAHU HONOLULU	HNL		LCU				RADIO	409.550 A ZHN
WP	HI	OAHU HONOLULU	HNL	08L	LOC	MARK 1F		FEB-1989	RADIO	409.550 A ZHN
WP	HI	OAHU HONOLULU	IUM	04R	LOC	MARK 1C		APR-1989	LAND LINE	409.550 A ZHN
WP	HI	OAHU HONOLULU	EPC	26L	LOC	MARK 1F		FEB-1989	RADIO	409.550 A ZHN
WP	NV	LAS VEGAS	LAS	25	GS	AIL-55		MAY-1989	RADIO	409.800 R ZLA
WP	NV	LAS VEGAS	LAS		LCU				RADIO	409.800 R ZLA
WP	NV	LAS VEGAS	LAS	25	LOC	AIL-55		MAY-1989	RADIO	409.800 R ZLA
WP	NV	RENO	RNO	16	GS	MARK 1F	CAPTURE EFFECT	FEB-1989	RADIO	409.550 A ZOA
WP	NV	RENO	RNO		LCU				RADIO	409.550 A ZOA
WP	NV	RENO	RNO	16	LOC	MARK 1F	DUAL SYSTEM	FEB-1989	RADIO	409.550 A ZOA
WP	NV	RENO	RNO	16	LOC	MARK 1F		FEB-1989	RADIO	409.550 A ZOA